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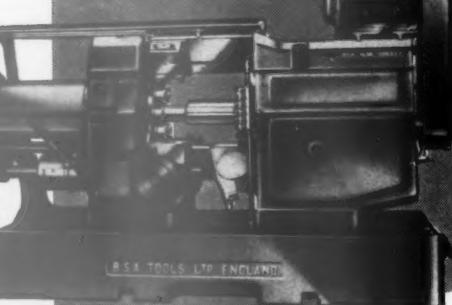
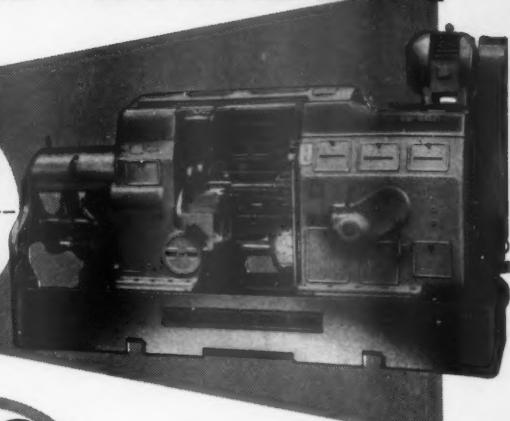
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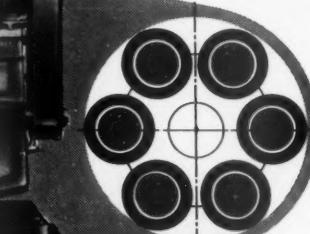


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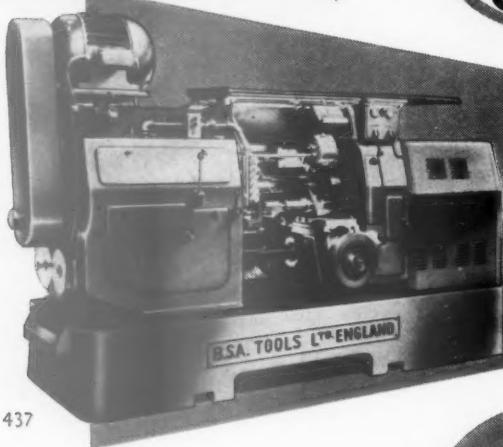
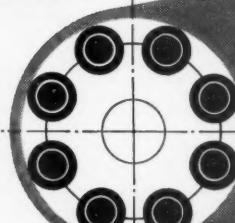
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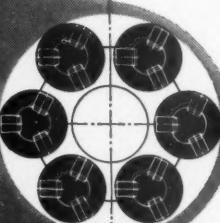
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CONTENTS

	PAGE
Editorial Notes	237
Tax Threat to Diesel Traction	239
Electric Traction in Sweden	239
Kent Coast Electrification and Modernisation	240
Electronic Switching	240
Canadian Pacific Railway in 1957	241
Letters to the Editor	242
The Scrap Heap	243
Overseas Railway Affairs	244
British Railways Standard Design Horsebox	246
Kent Coast Main Line Modernisation	247
Friction Materials for Railway Braking	250
Personal	253
New Equipment and Processes	256
News Articles	258
Contracts and Tenders	261

A Bad Time for Wage Increases

THE hope is expressed in the first report of the Council on Prices, Productivity & Incomes (the "Cohen Report") published last week, that "if any wage increases are granted in 1958, they will be substantially below the average of the past few years." The Council points out that although the cost of living has risen during the past 12 months, wage increases in the past few years have gone beyond what would be justified by the average increase in productivity. Despite higher productivity in the nationalised transport undertakings, any wage increases granted could only be passed on to transport users in higher charges, so aggravating inflation. The British Transport Commission could not otherwise pay higher wages without a subsidy, which the Government has stated it will not grant; and subsidies are rightly deprecated in the Cohen Report. It is unfortunate, therefore, that London busmen and British Railways staff should be seeking wage increases. This week, the demand of the Transport & General Workers' Union on behalf of London Transport busmen was heard by the Industrial Court. For the union it has been argued *inter alia* that certain London fares alleged to be uneconomic should be raised; this takes no account of the great consumer resistance that exists to fare increases. Although it has been possible in recent years to raise the fares of some provincial bus

undertakings without any violent public reaction, further fares increases by London Transport would cause an outcry and adverse criticism in the national Press from which provincial undertakings seem exempt. The busmen's case was formulated before the Cohen Report appeared. Exactly what arguments will be used next month by the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Transport Salaried Staffs' Association, when their respective claims are considered by the Railway Staff National Tribunal, remains to be seen. In view of the continuing fall in railway freight receipts, general increases in freight rates are out of the question. The leaders of the railway unions recently have been displaying moderation in the matter of redundancy; it is to be hoped they will do the same in regard to wages. Meanwhile, unemployment in several industries adds to the attractiveness of railway work, because it offers security. Unemployment among railwaymen, however, could well ensue if the financial position of the railways deteriorated; one of the best ways to avoid this is not to press impracticable wage demands.

Production Exhibition & Conference

FROM May 12 to May 21 the third Production Exhibition & Conference will be held at Olympia. The promoter of the Exhibition is Andry Montgomery Limited, and technical advice and sponsorship is provided by the Institution of Production Engineers, which has no financial interest in the project. The purpose of the exhibition and conference is to promote ideas and products and to show how these can improve the national standard of living. This purpose is succinctly expressed in the theme of the Exhibition & Conference: "Production Fights Inflation." On view at the Exhibition will be sections on research and development, training and careers, automatic production, aids to production, production in metals, and methods of production. There will be a section especially designed to accommodate the small and the very small firms. Subjects of papers will include the problem of selling in world markets; the economic background to production; cybernetics and operational research; the design of machines for electronic control; automatic equipment for jobbing and batch work, and (the subject of the E. W. Hancock Paper), the human problems in industry. The E. W. Hancock Paper has been established in recognition of the long service to production engineering of Mr. E. W. Hancock, a Past President of the Institution of Production Engineers and a Past Chairman of the Council of that body.

Consulting the Passenger

CONSULTATIVE bodies on passenger travel representing communities, or elements such as season-ticket holders, of communities served by railways are common today. To advocate them to railway management is usually to preach to the converted. Less generally appreciated, is consultation by questionnaire and other forms of public opinion survey. This matter is mentioned by Mr. R. M. Robbins, Secretary & Chief Public Relations Officer of London Transport Executive, in his paper given last week to the Railway Students' Association of the London School of Economics. He draws attention to two questions which must be asked when undertaking such inquiries: first, how far the views expressed are representative of all the railway customers concerned; and, secondly, whether the question is one that can be settled by public preference. As to the first, the use of modern techniques, and common sense on the part of the railway officers involved, should ensure accurate assessment, with allowance made for cranks and pressure groups. The answer to the second question must depend on circumstances. London Transport, active in consulting advisory bodies, does not seem to have used public opinion surveys as much as have the main-line railways, which have found them useful on several occasions, notably in making timetable alterations and in determining the design of rolling stock.

Improving and Equipping the Indian Railways

THE Indian Minister of Railways, Mr. Jagiwan Ram, in his estimates presented to Parliament last week, has budgeted for a surplus of Rs. 273·4 million (£20·5 million) for 1958-59; this compares with the current year's surplus, of Rs. 216·6 million, against the estimated surplus of Rs. 214 million. Major items of expenditure during 1958-59 will be Rs. 880 million on rolling stock, including imports to the value of Rs. 277 million; Rs. 290 million on new construction and restoration of dismantled lines; Rs. 330 million on track renewals; and Rs. 1,000 million on other works on open line. Much doubling is provided for, mostly on the Eastern and South Eastern Railways, presumably in connection with the expanding steel industry. High priority is stated to be given to electrification at 25 kV., 50 cycles, of Eastern Railway lines in industrial Bengal and Bihar, and to the Grand Chord line; but it is not clear how far, if at all, shortage of sterling and other currencies is slowing down the work.

Overseas Railway Traffics

PARAGUAY Central Railway receipts have shown a marked improvement in recent weeks in comparison with the 1957 equivalents, after a steady decline from July 1, 1957, the start of the financial year. At January 31, aggregate receipts were G55,373,185 compared with G58,930,299 for the corresponding period of 1956-57, a decrease of G3,557,114, but this figure was G1,721,072 better than at January 3, four weeks earlier. Costa Rica Railway receipts for January were colones 2,211,564 compared with colones 1,639,918 for January, 1957, an increase of colones 571,646. Aggregate receipts from July 1, 1957, amounted to colones 12,606,338 (colones 10,944,987). At January 31, the official exchange rate was colones 15·87 to the £.

Activity in Israel

THE lengths of journey possible over the Israel Railways have always been small, even before the restrictions imposed by the present frontiers and the cessation of through running to neighbouring countries. Nevertheless traffic has greatly increased in the last few years despite road competition: for the year 1956-57 the number of passengers was 4,565,000 and the freight tonnage 1,534,000, compared with 3,060,000 and 1,296,000 respectively for 1954-55. Introduction of diesel locomotives and railcars and re-laying of some sections with heavier track have made possible higher speeds, which have attracted passenger traffic, as has the newly-introduced seat reservation facility. Line capacity on the congested section between Haifa and Tel Aviv—single, like all other Israel lines—will be increased by the colour-light signalling now being installed. New lines are under construction. Main-line diesel locomotives and most railcars are equipped with radio sets communicating with headquarter stations. There is now more railway activity probably than at any time since the line from Kantara, on the Suez Canal, was built during the war of 1914-18.

Trans-Australian Gauge Conversion Project

A SCHEME is being considered in Australia to provide an alternative standard-gauge route from Queensland and New South Wales to South and Western Australia via Broken Hill and Port Pirie. It involves the conversion of the Broken Hill-Port Pirie section of the South Australian Railways from 3 ft. 6 in. to 4 ft. 8½ in. gauge, and of the 5 ft. 3 in. gauge Port Pirie-Adelaide section of that system to 4 ft. 8½ in. gauge. These works together with deviations, branches and yards are estimated to cost some £13,000,000, and a further £2,000,000 will be required to strengthen the Broken Hill-Parkes section of the New South Wales system. It is assumed that the Silverton Tramway Company's 36-mile line between Broken Hill and Cockburn will either continue to be run by that concern or be taken over and absorbed in the N.S.W.G.R. system.

With electric and diesel motive power it is expected that passenger trains from Sydney would take 18 hr. to Broken Hill, 25 hr. to Port Pirie and 27½ hr. to Adelaide. The savings over present times would thus be 10 hr. to Adelaide and 24½ hr. to Port Pirie. Through freight trains would reach Adelaide in about 40 hr. from Sydney. Such developments would also greatly benefit traffic to and from Western Australia and the Northern Territory, via Port Pirie. The opening up of this through traffic is expected to save £1,000,000 a year on existing traffic due to elimination of transhipment and improved working, and the conversion scheme should pay for itself in about 12 years.

Improving Braking Speeds

THE need for a friction material other than the almost universal cast iron for brake blocks has been felt for some years, as the weights and speeds of trains have increased. For example, to take full advantage of the greater acceleration of electric trains, better ability to decelerate is required; but the limit has been reached when this can be achieved merely by increasing the pressure on the cast-iron blocks in conventional braking systems, because the resulting effect of wear on the block and wheel rim outweighs any advantage to be gained from higher speeds. This has been shown by attempts to develop alternative systems, such as internal-expanding and disc brakes, which have been fitted on Talgo type trains in the U.S.A. and Spain, as well as by the trials of the latter brake being conducted in the Southern Region of British Railways. Because most railways are likely to continue to use the normal block-and-wheel-rim braking, it will clearly be of considerable help if materials can be developed to give superior performance to that given by cast iron, in varying climatic conditions. The development of a composition block by Ferodo Limited is the subject of an article on another page. This account of what is being done by one firm is published because we believe the experience of that company in research and development into the subject, as far as concerns railways, to be unique and so likely to assist railway managements and technical staff in their braking problems.

Railway Inspectorate's Duties Unchanged

SOME people still seem to think that nationalisation must in some way have altered the position of the Railway Inspectorate as to the railway authorities and the obligations resting on both. The authoritative statement on this point made by the Chief Inspecting Officer, Lt.-Colonel G. R. S. Wilson, in his recent address to the Railway Students' Association, makes the matter perfectly clear. Nationalisation in no way affected the Minister's jurisdiction under past regulatory Acts affecting safety; regarding this which indeed the Act of 1947 contained no specific provision. Duties and responsibilities of the Inspectorate remain exactly as in the days of the companies and rest substantially on Acts of 1871 and 1889. Another was passed in 1900, with the intention of reducing the risks incurred by railway servants in the performance of their duties. The Road & Rail Traffic Act of 1933, Colonel Wilson remarks, "merely consolidated existing railway legislation but added nothing which was really new." Powers to inspect new passenger lines and prevent them from being opened unless certain requirements are complied with date from 1842.

Inquiries into Accidents

INQUIRIES into accidents, as the public hears of them, began to be held in 1840, when the first Act was passed designed to protect the interests of the railway passengers by Government regulation. It was found not to give the Board of Trade all the power then thought essential; further legislation was enacted two years later. Not until 1871, however, did these inquiries possess statutory authority, when an Act considerably strengthened the powers of inspection enjoyed by the Board. It also specified the manner in which accidents were to be investigated, conferred adequate authority on the officers con-

cerned, and ordered that their findings be made available to the public in such form as the Board might decide. Unknown in most other countries, this practice doubtless has done much to reinforce the intention of the Acts and promote respect for the recommendations made by Inspecting Officers. Colonel Wilson emphasises that while it is his duty and that of his colleagues to criticise the railways when they feel that to be right, they believe it to be an obligation, whenever possible, to defend them from uninformed criticism; such indeed is seldom lacking whenever a mishap occurs.

Beyer-Garratt Locomotives in Rhodesia

IT is over 30 years since the first Beyer-Garratt engine was placed in service by the Beira, Mashonaland, and Rhodesia Railways on the line between Vila Machado in Portuguese East Africa and Umtali on the border of Southern Rhodesia. Twelve of these engines, known as the "13th" class, were introduced in 1926 to haul heavier loads than had hitherto been possible on the heavily graded and sharply curving track leading up to Umtali from Portuguese East Africa. As traffic increased, the "13th" class was replaced by larger and more powerful engines; today most of them have been withdrawn from service. Latterly they had been used almost exclusively for shunting, though they had given good service on branches; each has run about 800,000 miles. They had a tractive effort of 39,168 lb. at 85 per cent boiler pressure, and weighed 122 tons. This compares with the "20th" class Beyer-Garratts now being delivered from the United Kingdom. These weigh 225 tons and have a tractive effort of 69,333 lb. at 85 per cent boiler pressure. When the present order for 46 "20th" class has been completed, Rhodesia Railways will have purchased 250 Beyer-Garratts.

Tax Threat to Diesel Traction

WITH the approach of Budget Day, which will presumably be immediately after the reassembly of Parliament after the Easter recess, Members' minds are turning to possible tax changes and pressure groups are getting busy. As last year, there is talk in the lobbies of the desirability of easing the tax burden on road transport operators. Consequently proposals have been made for changes in the hydrocarbon oil duties.

One suggestion is that the tax should be applied equally to all oil users, irrespective of use, and that the total yield should be maintained by reducing the tax to the level at which that would be ensured. A recent question in the House of Commons elicited the information that if the yield of £340 million estimated for the current financial year were spread over the total quantity of hydrocarbon oils expected to be delivered for use in the same period, that would make possible a reduction to 1s. 1d. a gal. When a similar Parliamentary Question was put nine months ago the corresponding figure was 1s. 3d.

As the present financial and economic situation augurs ill for major tax reductions in the coming Budget, those interested in relieving the road transport industry of this heavy tax bill are favouring this proposal for spreading the burden. The suggestion ignores the serious effects that the shifting of the incidence of the tax would have on other industries and on the other sections of the transport industry. Farmers, for instance, are large consumers of fuel oils; if their tax bill went up they would demand a greater subsidy.

The effect on the railways would be considerable. Derv used by British Railway diesels is at present exempt; but with an increasing amount of diesel traction, consumption is rising. An addition of 1s. 1d. a gal. to the cost would not only upset completely the costing on which the cost of diesel haulage was based, but also change the competitive position. The latter, presumably, is one reason why the proposal has been made by those with interests in road passenger transport.

The questioner of the effect of spreading the burden was Mr. Frank McLeavy, Member for Bradford East, and

Chairman of the Transport & General Workers' Union group in the House of Commons. Frequently he has spoken for the road transport workers as opposed to the railwaymen in transport debates. Co-sponsor with him of a motion recently placed on the order paper calling for the spread of the duty "over the wider fields of users" is Sir Robert Cary, Director of Lancashire United Transport Limited, a member of the B.E.T. group of bus companies. Nor do the sponsors of the motion, which has attracted more than a score of signatories from all parties, disguise their purpose; they state that the "present application of the hydrocarbon oil duties falls too heavily upon the users of motor vehicles, particularly upon passenger and goods transport."

Diesel services on some lines of British Railways have attracted back some passenger traffic from the roads. To impose a fresh burden on the railways would weaken their competitive position. Thereby the benefit derived from modernisation would be neutralised. If the road passenger transport industry suffers today it is far less from railway competition than from the private motorist. If, as a consequence, it finds it hard to maintain its unremunerative services, as in many rural areas, it is more reasonable to provide relief, as, for example, through exempting public service vehicles from tax, and not to try to shift the burden elsewhere. The total revenue from the tax on derv is only £65 million, out of the total revenue from oil duties of £340 million; about half of this is obtained from road passenger vehicles. It is surely better for the State to forgo this £30 million than to transfer the charge to other industries. In the latter case much of the amount in any case would have to be found by the State, for agriculture is subsidised and the Government finds the money, even if by loan, for the railway deficits.

Electric Traction in Sweden

THE Sir Seymour Biscoe Tritton Lecture, given biennially before the Institution of Locomotive Engineers, was read on February 26 by Mr. Erik Upmark, C.E. Director-General of the Swedish State Railways. The paper, which is entitled "The Development of Electric Traction in Sweden and its Influences on Rolling Stock," is opportune. The many comparisons made by Mr. Upmark between the problems of his own system and lines in Britain should stimulate serious thought in the minds of British authorities planning railway electrification. His remarks are particularly valuable because, while stressing the many fine features of Swedish railway electrification, the author is not afraid to criticise where he feels this course is justified. The result is an unusually frank and informative paper certain to interest railway officers both in Britain and abroad.

The paper begins with a brief outline of the history of railway electrification in Sweden and a comparison of the relative merits of certain systems abroad. Swedish traffic conditions are fully described and relative costs of electric and diesel traction set out. The details given of the Swedish system include particulars of both track equipment and rolling stock. In discussing the relative merits of electric, steam, and, more recently, diesel traction in Sweden, reference is made to Mr. Th. Thelander's treatise entitled "Analyses of Competitive Relations between Railway Operating Systems; General Principles and their Application to Electric and Diesel-Electric Traction." This work, published in 1956, is available in English. The Swedish State Railways uses overhead contact wire fed at a nominal pressure of 16,000 V., single-phase, 16½ cycles, generated in lineside converter stations. Swedish locomotives use only one pantograph fitted with carbon contact strips.

Attention is drawn to the relative merits of coupled and single-axle-drive electric locomotives, and the problems of adhesion are dealt with at considerable length. The effects of electric traction on the track itself are studied. Swedish track on electrified lines consists mainly of 100-lb. or 85-lb. F.B. rails with ordinary spikes, baseplates, and soft-wood sleepers at 26-in. centres. The maximum permitted speed is 75 m.p.h. for locomotive-hauled trains and a

slightly higher speed for multiple-unit sets. Frost-heaving is a serious problem in Sweden despite costly measures taken to reduce it. Intensive research into the effects of rolling stock on track has been carried out in that country, and some interesting facts were given on that subject. A special mechanical laboratory has been built by the Swedish State Railways and a leading Swedish electrical manufacturer, A.S.E.A., is among the industrial concerns which have collaborated in investigations carried out therein.

Motive power considered by Mr. Upmark in his paper includes electric locomotives, multiple-unit trains and electric railcars; and he deals also with the manning of electric locomotives and multiple-unit trains. The influence of electrification on passenger and freight stock is explained in considerable detail and makes particularly interesting reading. Braking is discussed and reference made to the air brakes introduced on all rolling stock by 1926 and the automatic self-adjusting brake gear fitted since 1945. At present about 75 per cent of freight rolling stock for standard gauge is fitted with roller bearings, and the balance will be so equipped in the near future. The increased speed of electric trains over relatively poor track has demanded better bogies on passenger stock, but the problem of a satisfactory design is now being overcome. Electric heating is in use on about 95 per cent of passenger stock. As heating requirements are high, 35 kW, a coach, the total heating load in a long train is considerable. All modern restaurant cars are air-conditioned and have fully-electrified kitchens. Electrification has made possible the use of both heat-insulated and refrigerated vans to suit the climatic changes experienced in Sweden.

Kent Coast Electrification and Modernisation

THE most urgent major undertaking of the Southern Region of British Railways under the British Transport Commission Modernisation Plan is the electrification and modernisation of the Kent Coast main line. Besides its considerable goods and passenger traffic to and from the Maidstone and other feeder lines, it directly serves all the north and east Kentish coast resorts (combined population in winter about 150,000), the Medway Towns area (nearer 200,000), and one of the fastest-developing dormitory areas in the country (in such vicinities as St. Pauls and St. Mary Cray) and the many other new housing estates near Rochester, Chatham, and elsewhere. It is also an alternative route for Dover Continental boat trains via Canterbury, itself one of the most notable pilgrimage and tourist centres in Britain.

Unfortunately, the line was built hurriedly by the London, Chatham & Dover Railway for competitive reasons, with severe gradients and in places sharp curvature. With these advantages and disadvantages in view, it was long ago recognised that at least the London-Medway Towns section was well suited to electrification, an undertaking that was, in fact, completed as far as Gillingham in 1939. Though this facility went a long way towards solving the problems of that section of the line at the time, its effects were stultified by an out-of-date signalling system and track limitations, especially east of Bickley Junction, where there are still only two tracks throughout. With the phenomenal postwar development of the areas served, the problem of carrying simultaneously rush-hour long- and short-distance season-ticket passengers and those in expresses from North East Kent rapidly became acute. Nor had the electrification secured any relief for traffic beyond Gillingham, which was also developing rapidly in some directions.

The British Transport Commission modernisation plan, announced nearly three years ago, therefore offered a welcome opportunity for the extension of electrification, widening, modern signalling and junction improvements needed to speed up all classes of traffic. Considered of urgent priority, the first stage of this ambitious scheme was allocated £25,000,000 forthwith, with June, 1959, as a target date for completion.

Besides the installation of the Southern Region standard 750-V. d.c. electrification equipment from Gillingham to

Ramsgate, Dover via Canterbury, and Sheerness, this first stage includes widening and other line improvements—such as the elimination of bottlenecks and speed restrictions on curves—colour-light semi-automatic and remote-controlled signalling from Brixton to the coast and to Sheerness, and the provision of electric traction rolling stock. In the view of the administration, the semi-automatic colour lights, that have proved invaluable on other Southern lines, are an essential factor in securing the maximum use of the new trains and tracks. Altogether, about 400 of these new signals will be installed, and they will enable 28 existing signalboxes to be replaced by eight new automatic boxes. The latter will be equipped with panel route-selection switches, and remote-control of signals and points will also be installed for the first time in the Southern Region. The entire eight-mile Sittingbourne-Sheerness branch will be controlled by a single new box at Sittingbourne instead of by the several boxes at present in use. An editorial note in our issue of June 28 last, briefly outlined the signalling involved.

The new rolling stock required for this line will consist of 53 four-car electric express units and 62 two-car units for intermediate services. Unlike the existing Brighton-line units, which have no communication between the two halves of a twelve-car train, the new four-car Kent Coast units are being designed so that the corridor connection runs the whole length of each train. One buffet car can thus serve the whole train. The two-car intermediate-service units will resemble those now in the Sevenoaks services. They have one semi-saloon coach drawing a corridor trailer with first- and second-class compartments and two lavatories; there is no vestibule between the cars.

The sub-station, cable and other equipment was described in our issue of May 10, 1957. For freight traffic, 13 electric and 45 diesel locomotives are to be built. The present intention is to run hourly services between Victoria and Ramsgate of 12-car trains (three four-car units), with a unit for Canterbury and Dover, probably detached at Gillingham; this will provide an increase of about one-third over the existing service. There will also be some trains between Charing Cross and the same coastal stations, running via one of the Bickley spur loops.

The widening works in hand between Rainham and Newington were described in our issue of November 8 last, but the great bulk of the engineering works in hand at present are the subject of an article on another page of this current issue. The very considerable extent of this civil engineering undertaking and the remarkable rapidity with which it is being carried out reflect great credit on all concerned.

Electronic Switching

THE lecture given before the Institution of Railway Signal Engineers recently by Mr. Norman Smart on electronic switching dealt with a subject not previously discussed by that body. It is one of growing interest to its members, to whom the possibility of eliminating contacts and performing at least some of the functions hitherto effected by relays without having recourse to moving parts must offer considerable attraction. The lecturer reviewed the application of these new principles and certain apparatus embodying them to telephone exchanges, of which the signal engineer, today responsible for telecommunications as well as signalling as ordinarily understood, has quite a number under his care; he also has much associated equipment which conceivably might be simplified by applying the latest developments in the electronic field.

Mr. Smart also showed how great had been the progress made since the days when signal and telegraph engineers depended entirely on simple electromagnetic mechanisms operated by current from batteries, but achieved with them very creditable results. They then learned with duplex, quadruplex, and multiplex telegraphy, to render their circuits available to a plurality of simultaneous messages; these conceptions were to lead, when progress in physics brought what came to be called carrier systems,

to even more valuable facilities, of great economic importance to the expansion of the national communications system.

The perfecting of electro-mechanical switching mechanisms and small-size relays to a degree that once seemed hardly possible brought the automatic telephone—and later teleprinter—exchanges and their adaptation to railway needs. This called for specialist knowledge to design and install them. One reason for turning to electronic methods which, in the computer and other fields have yielded such surprising results, was the difficulty of obtaining competent manpower to maintain the increasing volume of apparatus to which the continual extension of telephone facilities must give rise. There was also the possibility of making more compact installations bringing other advantages.

Some of the methods described by Mr. Smart were reminiscent of the theory involved in certain multiplex telegraphs. In these a common path was made to carry a number of messages between a number of stations by connecting them to it in turn for a very small fraction of time in a given complete and regularly recurring minimum interval; this originally required elaborate synchronised mechanisms, presumably now replaceable by electronic controls. The application of such controls, it was made quite clear, to the involved demands of large telephone exchanges and connecting networks remains still a matter for considerable research and experiment, which is being pursued co-operatively by the industry in association with the Post Office authorities. In this way, on the basis of the encouraging progress so far made, it is hoped to arrive at a maximum of achievement with the minimum of effort and outlay, free from wasteful overlapping, and so arrive at solid practical results beneficial to all concerned.

The adaptation of the same or related methods to signalling, as distinct from ordinary communications, necessarily involves safety considerations with which the telephone engineer is not concerned. He indeed desires to attain the highest possible level of operating reliability; but he is not faced with the possibility of a false clear signal being shown to a train if something breaks down. The signal engineer cannot admit any lowering of the standards he has so long insisted on and it remains to be seen how far electronic devices can be made to conform to them. It is possible, however, as has in fact been done under earlier methods, to separate vital, or what may be called interlocking, controls from indicating ones, involving the sending of orders and receiving of proving indications but not their final translation into strictly signalling operations. There indeed electronic methods might doubtless be used to much advantage and they are being incorporated in installations under construction in this country and in France as part of the re-signalling of important main routes. The signal engineer is forced by pressure of circumstances to explore every path by which, without any sacrifice of safety, he can give better facilities at less cost, both for installation and upkeep; and he must make use of whatever aid the progress of science puts in his hand, of one field of which Mr. Smart's address gave such an informative picture.

Canadian Pacific Railway in 1957

THE recession in the Canadian economy last year caused a sharp decline in the freight traffic of the Canadian Pacific Railway, as shown in lower car loadings in a wide range of commodities. Railway revenues also suffered as a result of the firemen's strike in January, 1957. Nevertheless there was progress in all the railway's activities. This is made clear in the year-end review by Mr. N. R. Crump, President of the C.P.R. Despite some traffic rate relief, he points out, rail revenues in the period January-October declined by some \$13,800,000; freight traffic revenues were lower by \$3,200,000. Rail passenger receipts, however, showed an improvement of \$800,000.

In accordance with the C.P.R. Company's programme

of conversion to diesel traction, scheduled for completion in 1961, 154 new diesel locomotives were acquired during the year bringing the number of diesel units in service to 822. The number of box cars, motorcar vans, triple-hopper and covered hopper, ore, and drop-end mineral, and flat cars is being steadily increased to keep pace with the anticipated demands of industrial growth in Canada. During the year, 4,825 new freight vehicles of all types were placed in service. The "Dayliner" railcars, stainless-steel self-propelled cars, which are steadily gaining in popularity with the travelling public, have not only brought about an increase in traffic, but have also resulted in operating economies on low density runs formerly served by conventional steam-hauled trains. In 1957, 12 "Dayliners" were acquired, increasing the fleet to 43.

Some 400 miles of new and 250 miles of relay rails were laid on main lines as replacements; 1,800,000 new sleepers were installed and 535 miles of track reballasted. Maintenance work was further mechanised by the purchase of power machines and power tools. Installation of C.T.C. is proceeding on the Montreal-Toronto line between Glen Tay and Agincourt, with control for the entire area being located in the dispatching offices at Toronto. Automatic block signals were installed on the remaining 26 miles of the Toronto-Sudbury line, and on 55 miles of the Calgary-Edmonton line. Further modernisation of passenger station facilities at Calgary, a start on construction of a communication building in Winnipeg, and enlargement of diesel servicing shops at Calgary and Montreal, were included in the company's building projects during the year.

An outstanding development in C.P.R. services during 1957 was the inauguration of common carrier "piggy-back" facilities between Montreal and Toronto. Since inauguration of the service in mid-October, complete train loads of semi-trailers have been moving each night in both directions between Montreal and Toronto. Canadian Pacific Transport, operating a co-ordinated rail-road service in Western Canada, has met with increasing success. A new head office and road vehicle terminal were completed in 1957 at Winnipeg and expansion of the service is continuing.

The popularity of the Telex service, inaugurated in 1957 jointly with the Canadian National Railways, which enables subscribers to dial others for direct teletype communication, is reflected in the substantial growth recorded in this phase of C.P.R. communications. Through-telegraph and cable connections, Telex enables subscribers to establish communication with 30,000 subscribers throughout the world. Micro-wave facilities were extended during the year to Sherbrooke, Rimouski, and Jonquiere, and now serve jointly 11 television stations in Canada, with some 850 miles of network. Completion of the system of advanced integrated data processing was achieved with the installation of a high-speed electronic computer early in the year. Under the new system, information required for operating, transportation, traffic, statistical, and accounting purposes is recorded on punched cards or tape and transmitted over the company's communication network for processing on the high-speed electronic computer in Montreal, and thence transmitted in processed form, to points of use. Source recording is now in operation at 30 centres using advanced equipment and at 34 others using temporary equipment which will be replaced as deliveries of new models are received.

Progress in the Canadian Pacific Steamships modernisation programme was marked by the placing in service on the Atlantic of the new 25,500-ton *Empress of England*. Plans were also announced during the year for the construction of a third and larger liner. An order has since been placed for the construction of this ship with Vickers-Armstrongs Limited, builders of the *Empress of England*. During the year Canadian Pacific Air Lines international services were expanded and it was decided to seek authority to operate a competitive domestic transcontinental air service on a new main line route pattern linking nine cities from Vancouver to Montreal.

LETTERS TO THE EDITOR

(*The Editor is not responsible for opinions of correspondents*)

Design Appearance in Railway Equipment

February 17

SIR.—I have read Mr. Beresford-Evans' letter in your issue of February 14 several times; despite his protestations, I cannot make it mean other than that anyone who disagrees with him and his colleagues lacks taste. Most people will prefer your own assessment and will be content if proper consideration is given to styling, even although the result does not happen to please them individually.

One may well ask whether the sledgehammer method of appointing a Design Panel to sit with, and frequently on, the designer of the vehicles is not giving the subject much more than its proper consideration. This body is unquestionably costing a good deal in money and interference; and now that some of its products are becoming available for inspection, it seems that the time has arrived to ask whether it is all worthwhile.

It seems to me that those locomotives so far styled by the Panel bear all the marks of a self-conscious attempt to impress, and certainly do not represent any expression of the machines' inbuilt characteristics or purpose. Nor is it easy to see how they could, when the functional design is created by one, largely unsung, team with the appearance grafted on by another.

Your regular analyses of traffic trends show all too clearly that the British Transport Commission has no time to spare on irrelevancies and I suggest that the obsession with appearance revealed by the appointment of the Design Panel is one of them. It would be interesting to know what proportion of those closely at grips with the daily problems of making British Railways work and pay would agree.

Yours faithfully,

W. SYDNEY

9, Lennox Street, Hastings

Standardisation of Rolling Stock

January 18

SIR.—Your correspondent, Mr. Lamond, in your January 17 issue questions the policy of the British Transport Commission with regard to rolling stock. May I go further than that and suggest that it is time to give serious consideration to just how little progress has been made since the first standard coaches appeared in 1951?

Technically, the 1951 designs had virtually no new major features, being an amalgam of various features introduced and standardised by the four main groups during the preceding 25 years; taking as examples those most often quoted, large gangways and buck-eye couplers were standard on the Southern Railway from 1927 and all-steel bodies appeared on the London Midland & Scottish shortly after. So far as passenger comfort is concerned, the standard adopted was about equal to that reached by the L.M.S. in the middle 1930s. The only new major feature was the adoption of a lighter and stronger underframe, the advantages of which were offset by the flimsy way in which the body was attached to it.

The coaches built during the succeeding seven years have been virtually identical to the prototypes. No serious attempts have been made to improve seating, riding qualities or to reduce noise level; compartments still lack leg room (particularly in suburban stock, due to sheer bad design); and the excessive amount of timber incorporated in the so-called "all-steel" body gives rise to a degree of rattling and drumming never found in pre-standard designs.

The experimental coaches recently placed in service do not encourage hopes of improvement: first, because they are avowedly not for general service; and secondly, because, with two exceptions, they are basically ordinary body shells filled with fancy brassware, over-stuffed uphol-

stery and pseudo-Victorian décor. Corridor heating, standard before 1951 but since discarded, has been rediscovered, but seating still leaves much to be desired, and the much-vaunted "greater leg-room" is no advance on the regional designs of 10 years ago.

I suggest that it is not so much standardisation which has been achieved as stagnation.

Yours faithfully,

L. A. MACK

13, Upper Grotto Road, Twickenham, Middlesex

The Recent Development of A.T.C.

February 21

SIR.—I refer to the editorial article in your February 21 issue. I was among the members of the Press whose presence "flabbergasted" Mr. Currey at Kings Cross when the prototype A.T.C. equipment was shown in 1952. I remember that the visual indicator was the most prominent feature visible from the platform. I really cannot recall, however, that the importance attached to this feature in subsequent reports of this hastily convened gathering was excessive—certainly not to the extent of justifying fears that a public outcry would result if it were subsequently dropped. As to the impossibility of explaining that the indicator should not be there, such an attempt would have been superfluous to an audience largely unaware of what it was.

I find it hard, therefore, to believe in a pressure group of the "non-technical Press" demanding visual indicators at all costs. Very little information in fact was vouchsafed on this occasion, and I remember chiefly the admission, not made in the general statement, that the apparatus would not give a double-yellow warning such as had been shown to be practicable with the G.W.R. equipment some three years previously. It would be pleasant for journalists to think that events are shaped to fit what has appeared in the Press, but your editorial article was the first serious suggestion I have seen that this is what may take place.

It occurred to me in reading Mr. Currey's paper and hearing it presented—when it was emphasised that the visual indicator is in no sense a cab signal, so that presumably it does not conflict with Clause 3 of the Railway Executive remit—that his comments on the Kings Cross episode reflect the common irritation of the technician at having his work made public before its details are cut and dried. This feeling seems more prevalent here than across the Channel. The bibliography of 50-cycle traction since the war bristles with detailed descriptions and drawings of projects in course of execution, many of which must surely have been modified before they came to fruition. Yet nobody seems any the worse for it, and the French railway export industry seems to benefit from the publicity received.

Yours faithfully,

B. K. COOPER

33, Park Road, Radlett, Herts.

February 24

SIR.—On reading the editorial article in your February 21 issue, one can only assume that since 1951, much time, money, and effort have been wasted. Surely it would have proved cheaper, and, incidentally, probably averted several serious and costly accidents, if a licence had been obtained for the manufacture of a well-tried and flexible foreign system of inductive A.T.C., such as that widely used in Switzerland.

Yours faithfully,

JOHN RODGERS

132, Worrin Road, Shenfield, Essex

THE SCRAP HEAP

First Case of Passenger Consultation?

In his paper to the Railway Students' Association, "Consulting the Passenger," the subject of editorial comment on another page, Mr. Michael Robbins mentions the change of attitude towards consultation of passengers which seems to have begun in Britain in 1920. In that year, Sir Henry Thornton, General Manager of the Great Eastern Railway, caused a circular to be issued inviting comments on, and suggestions for improving, the services on the Liverpool Street to Chingford, Enfield, and Palace Gates lines. Part of this is reproduced below. Mr. Robbins suggests that it was drafted by Thornton's staff, who tried to keep to the spirit of his instructions. Thornton was an American. The style is believed to resemble that of the late A. L. Gibson, later Continental Traffic Manager, L.N.E.R.:

"It is impossible to completely satisfy all our passengers, for the requirements of some are in direct opposition to those of others. It is my wish, however, to fit our train services, so far as it is possible, to the requirements of our passengers, and there may be some inconveniences of which we are not aware that could, amongst others of which we are aware, be eliminated. Passengers must know their own inconveniences better than anyone else. Should any passenger, therefore, wish for any reasonably possible alteration in the train services quoted at the head of this memorandum, I shall take it as a favour if such passenger will state the requirement as briefly as possible on the back of this memorandum and hand it to any

Great Eastern Station Master. . . . The space on the back of this memorandum is divided into two portions, the upper for the passenger's name and address and requirement briefly stated, the lower for details, should these be necessary, which is most unlikely; and also for the benefit of those who cannot state a simple requirement without also giving an epitome of their past life and what they intend to do in the future, together with a violent attack on railway officials in general."

Locomotive Building Boom (1898)

Our Glasgow Correspondent writes: There is a boom in locomotive building, and builders are not merely booking orders for engines by the half-dozen, but by the score. One company has booked 25 engines, with tenders, for the Bengal-Nagpur Railway, and 10 for the Egyptian State Railways. The Midland Railway Company is asking tenders for 20 passenger and 20 goods engines, and these are almost sure to come to Glasgow. The Swedish railways ask for 20 locomotives.—From "The Financial Times," February 19, 1898.

Uruguay Railway Mystery

The locomotive on the 1895 Uruguay stamp, reproduced in the accompanying illustration, was long believed to have been of British design, bought from the Great Northern Railway and shipped to Uruguay where it did many years of faithful service. It was thought to be the original Patrick Stirling 8-ft. single No. 1, but because of certain modifica-



Uruguayan stamp issued in 1895 illustrating locomotive believed to be G.N.R. Stirling single No. 1

tions had not been placed in service by the G.N.R.

On enquiry it was found that the earliest locomotive of which the Uruguayan State Railways have knowledge is one known as Class "7," of much later date, and obviously quite different from that illustrated on the stamp.

The Eastern Region of British Railways has confirmed that there is no trace of any such transaction between the G.N.R. and Uruguay, despite the obvious similarity of the design on the stamp with the famous G.N.R. locomotive. The stamp was first issued in 1895 in red and later in green and blue; the printers were Waterlow & Sons Ltd., London. It may well be that they took this British locomotive for a design of this particular stamp which was ordered by the Uruguayan Post Office.

Cor!

(See our February 14 issue)

On the Norwich-Yarmouth Line
A mysterious diesel whine
Has been heard when diesel trains aren't
scheduled there,
And such spooky things combine
To send shivers up the spine,
With an eerie elevation of the hair.

The good folk of East Anglia
May now compose their ganglia,
For intensified investigation shows
That these eldritch ululations
Are not ghost train emanations,
But, in fact, can be attributed to crows!

Why, forsaking nature's laws,
After centuries of caws,
Should these buccaneering bipeds play
the mimic?
Can it be that their desire in
Imitating that old siren
Comes from feeling that they, too,
require a gimmick?

A. B.

Vertical Boiler Locomotive



Photo]

Italian State Railways 0-4-0 tank engine with vertical boiler. It was built in 1907, was recently shed pilot at a depot near Turin, and is eventually to be preserved in the State Railways Museum

[P. Ransome-Wallis

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

QUEENSLAND

"Goodwill Officers"

Four "goodwill" officers, one for each division of the Government Railways, have been appointed as part of the plan to win back business to the railways. They will work under the direction of the district General Managers, and are to be assisted by passenger and freight traffic officers in their approach to railway users or potential users.

VICTORIA

Decline in Suburban Passengers

The annual report of the Victorian Railways Commissioners, tabled in the Legislative Assembly on November 28, 1957, attributes the decline in suburban train passengers of more than 11,000,000, on 6·7 per cent, since 1950, to the use of private motorcars. In the same period the population of Melbourne increased by some 300,000, or 24 per cent.

The report reveals a deficit for the year of £5,192,735, which is an increase of £922,055 on the previous deficit.

NEW ZEALAND

"Da" Class Locomotives

The 30 "Da" class diesel-electric locomotives in use between April, 1956, and March, 1957, averaged more than 60,000 miles each for the year. This represents an average of 200 miles a day in use.

Auckland-Mercer Doubling

Completion of double line through Tuakau Station in October, 1957, closed the last gap in double-line working between Auckland and Mercer. The main line south from Auckland has now been duplicated as far as Whangamarino Stream, 46 miles. This is the largest

stretch of double line in New Zealand. Work is now proceeding on extension of the double line northwards from Ohinewai to a point some 2½ miles north of Te Kauwhata.

Luggage Lockers at Wellington

The installation of 84 new luggage lockers in the main concourse at Wellington Station has brought the total number in use to 124. Coin-in-the-slot lockers, introduced to Wellington in December, 1956, proved so popular that the original 40 were inadequate to meet the needs of travellers. It is estimated that each of the original lockers was used two or three times daily.

The new lockers have been installed at the eastern end of the station concourse, in the vicinity of the luggage room counters and close to the main arrival platform.

SOUTH AFRICA

Rand-Cape Line Improvements

A £7,000,000 improvement scheme has been started by the South African Railways to relieve congestion on the Rand-Cape line and to provide a direct route for iron ore from the fields near Kimberley to the Iscor Steel Works at van der Bijl Park in the Transvaal. The money has already been granted by Parliament and most of the survey work is complete.

This development scheme has been timed to coincide with the expansion of the steel works at van der Bijl Park. At present some 6,000 tons of ore are being delivered daily by rail to the works. This tonnage will soon increase to 8,000 and later to 10,000.

Long Welded Rails

Long welded rails of more than 120 ft. in length were laid by the South African Railways for the first time on stretches of track other than in tunnels or in experimental sections during



Consignment of mining equipment carried by the 3-ft. 6-in. gauge Benguela and B.C.K. Railways from Lobito to the Katanga region

November last. Two of the deviations on the Volksrust-Standerton section, which were handed over to traffic during November, now have rails half a mile long. All other deviations from Volksrust to Heidelberg, now under construction, will have rails of the same length. In addition these long rails will be used on the doubling of the Belmont-Poupan section, on the De Aar-Noupoort section, and on the Germiston East-Natalspuit new line.

The advantages of long rails are: track maintenance is reduced; there is a saving in sleepers and fastenings; a smaller number of joints and a consequent reduction in shock to wheels; and smoother riding of passenger coaches.

Catering Department Losses

Recurring losses by the Catering Department of the South African Railways has led to a review by the Railway Administration of charges and menus.

Breakfast on trains at 3s. 6d. now consists of a cereal, either bacon and egg or sausage and mash or mince on toast, instead of all three dishes as in the past. The breakfast also includes the usual marmalade and tea or coffee. The lunch and dinner menus at 4s. and 5s. respectively have been similarly revised to provide a full meal without all the extra dishes which added so heavily to the costs and which it has been found impossible to provide at the prices charged.

The changes in the menus are the result of a report by a committee which made a thorough investigation into all aspects of railway catering.

EAST AFRICA

Record Tonnages

E. A. R. & H. conveyed 128,400 tons of freight off Mombasa Island to up-country stations in the month of January. This is the highest tonnage yet recorded for this traffic; the previous highest being 128,100 tons in December, 1956. Included in this record tonnage were 1,202 motor cars, 3,500 tons of cement clinker, 9,000 tons of wheat, and considerable quantities of fertilisers, coke, salt, and cylinders of gas. In addition 35,700 tons of oils for public sale were brought off the Island, the highest tonnage to be carried by rail in any one month.

ANGOLA

Bulky Load on Benguela Railway

The accompanying illustration shows the largest individual load so far carried on the 3-ft. 6-in. gauge Benguela Railway. This was a piece of mining equipment which reached the port of Lobito last December; it was imported

by the Union Minière du Haut-Katanga, and conveyed to a destination in the Belgian Congo. The consignment was moved from Lobito over the Benguela and Bas Congo-Katanga Railways.

The weight was 47 tons, length 70 ft. 10 in., width 9 ft. 10 in., and height 9 ft. 6½ in. The equipment is shown loaded on a well wagon of 50 tons capacity, between two runners. On the Benguela Railway, the journey of 838 miles from Lobito to the Congo frontier took six days, as travel was restricted to the daylight hours. The maximum speed allowed was 22 m.p.h. on straights and 9 m.p.h. on curves, the minimum radius of which is 5 ch. No special care was required on bridges, and all curves were easily negotiated.

INDIA

Proposed Line to Avoid Delhi

The Railway Board has sanctioned the final location survey for a line between Ghaziabad and Tughlakabad over the second Jumna bridge, a distance of 16 miles. The survey will be carried out by the Northern Railway.

The main object is diversion of freight traffic from Tughlakabad and Ghaziabad without passing through the busy yards at Delhi and New Delhi.

Another object is to start passenger trains bound for Allahabad, Lucknow and Calcutta from New Delhi instead of Delhi Main, as at the latter station the platform capacity is extremely limited and it is difficult to handle all passenger trains.

Abolition of Second Class

The Deputy Minister for Railways, Mr. Shah Nawaz Khan, has announced second-class accommodation in long-distance trains will be abolished only after sufficient sleeping accommodation has been provided for third class passengers. He has also stated that second class has already been abolished on short branch-line sections and on the suburban sections of Calcutta and Madras; no time limit has been fixed for its total abolition.

Bhildi-Raniwara Link

The 44-mile metre-gauge line of the Western Railway was recently opened to goods traffic. It connects Bhildi, 11 miles from Deesa on the Gandhidham branch, with Raniwara, terminus of the existing Samadari-Raniwara metre-gauge line of the Northern Railway. The new route reduces the distance for traffic between the port of Gandhidham and the areas of Rajasthan and Southern Punjab and provides an alternative route; it will avoid congestion on the metre-gauge Ahmedabad-Delhi main line of the Western Railway.

Second Five-Year Plan

During 1956-57, the first year of Indian Railways Second Five-Year Plan, 87 miles of new lines were opened to traffic, and at the end of the year 524 miles were under construction. Work

was also in hand on 700 miles of doubling.

Orders placed during the year covered 557 locomotives, 1,931 carriages, and 27,184 wagons. During the First Five-Year Plan period, 500 locomotives, 4,314 carriages, and 41,982 wagons were built in India. Imports included 1,061 locomotives, 446 carriages, and 19,274 wagons.

UNITED STATES

Ending a Pullman Contract

In its continuing efforts to cut its losses in passenger operation, the New York Central System has given notice to the Pullman Company that its contract with the latter to operate N.Y.C. sleeping, dining, and drawing room cars will terminate on July 1. In 1947, after prolonged litigation, the anti-trust suit brought by the Federal Government against Pullman Incorporated compelled that company to separate its building and operating activities, and to dispose of one or the other, with the result that the operating and servicing of the cars was turned over to a consortium of 59 railways, of which the New York Central is one. The New York Central proposes to maintain passenger stock in its Beech Grove shops, and presumably will need to buy from the Pullman Company all the cars needed to maintain such N.Y.C. Pullman services as continue to run.

Chicago Suburban Services

The Chicago & North Western Railway is seeking authority from the Illinois Commerce Commission to close 23 Chicago suburban stations, most of them in places adequately served by the Chicago Transit Authority. This would leave open within city limits only exchange stations between the C.N.W.R. and C.T.A. The elimination of stops would cut journey times to and from the outer suburbs. If the proposals are agreed, the loss in operating the C.N.W.R. suburban services, \$2,108,500 in 1956, could be turned, the railway management believes, into an annual surplus of \$1,500,000.

Moffat Tunnel

An application by the Denver & Rio Grande Western Railroad to the Colorado Public Utilities Commission to discontinue the working of a stopping passenger train in each direction over the 231 miles between Denver and Craig, because a crew of six was required to work a train which carries an average of nine passengers only, has led to a counterclaim by the latter that the D.R.G.W. is being "subsidised" by its use of the 6½-mile Moffat Tunnel on this route. The tunnel was built and is owned and controlled by the Moffat Tunnel District of the State of Colorado. For its use the D.R.G.W.R.R. pays an agreed rental (\$415,900 in 1956), besides taxes to the value of 20 per cent of the total revenue of Moffat County. For the time being the Commission has refused the railway's request.

FRANCE

Jet Aircraft Engine Tests on S.N.C.F.

Recently the Société Nationale d'Etude et de Construction de Moteurs d'Avions carried out tests on the railway tracks between Etampes and Pithiviers with the ATAR P3 jet turbine aircraft engine, which is designed to promote a vertical take-off. The S.N.C.F. provided a train consisting of a 2,000-h.p. diesel locomotive, a laboratory wagon, two heavy brake vans, and several flat wagons, on one of which last the ATAR P3 was installed. A dynamometer, with piezo-electric cells, was placed between the jet opening and a fixed point. The main object of the tests was to study the behaviour of the jet engine whilst drawing in the burnt gases emitted from the discharge nozzle.

Record Traffic in Villeneuve Yard

On December 19, 1957, the Villeneuve-Saint Georges marshalling yard set up a new record for the number of wagons handled in 24 hr. In all, 4,972 wagons were shunted, 50 more than the previous record. The total number of incoming trains was 97, with an average load of 51 wagons.

Productivity of the Railways

In a recent statement by Monsieur Louis Armand, former President of the S.N.C.F. and now President of Euratom, it is shown that in the years 1938-56, the national product increased by 62·4 per cent; during the same period, traffic on the S.N.C.F. rose by 64·8 per cent. Despite this somewhat greater percentage increase in S.N.C.F. traffic, however, the receipts of the S.N.C.F. as a percentage of the gross national product decreased from 3·64 in 1938 to 3·01 in 1956.

BULGARIA

Special Fruit Trains

The Bulgarian Republic Railways are reported to be working 16 double-bogie refrigerator vans and two power-equipment cars in one train taking fresh fruit and vegetables from Bulgaria to Berlin and other destinations in Eastern Germany. Each equipment car contains a 90-kW. diesel-generator set to provide refrigerator current and other services through half the train.

SWEDEN

Carriage Locking Device

The State Railways have carried out successful tests with an automatic locking device for passenger carriage doors. An electro-magnet, energised by the coach battery, holds the doors locked until the train speed falls below 3 m.p.h.

CHINA

Separate Exhausts for Air Brake Pumps

All locomotives have been fitted with separate exhausts for air brake pumps. A pipe, or sometimes a silencer, is affixed at the back of the chimney.

British Railways Standard Design Horsebox

Design and construction basically similar to passenger stock

THE Earlstown Carriage & Wagon Works of the London Midland Region, has completed a design of horsebox which will become standard on British Railways; the horsebox was designed at Eastleigh, and is the first British Railways designed horsebox to be built. Much use has been made of the technique applied to the construction of British Railways standard carriages, the body being made up of "Z" and top-hat section pillars, to which the 16 s.w.g. inside panels are welded in sections, all of which are assembled on fabricated outriggers. The roof is constructed as a separate unit, and consists of top-hat section carlines and purlins, to which the galvanised roof panels are welded.

Interior

The interior arrangements are such that the horse compartment can be converted to two or three stalls as required. Provision is made for a groom's compartment, adjoining which is a tiled

floor toilet compartment, which is accessible by means of a short corridor. Sliding doors are arranged for access to the manger troughs from the groom's compartment. Bales and fodder compartments are also provided at each end of the vehicle. The overall length of the vehicle is 31 ft. 2 in., and the wheelbase is 19 ft. The interior finish of the groom's and lavatory compartments is in $\frac{1}{8}$ in. plastic on $\frac{1}{8}$ in. hardboard panels.

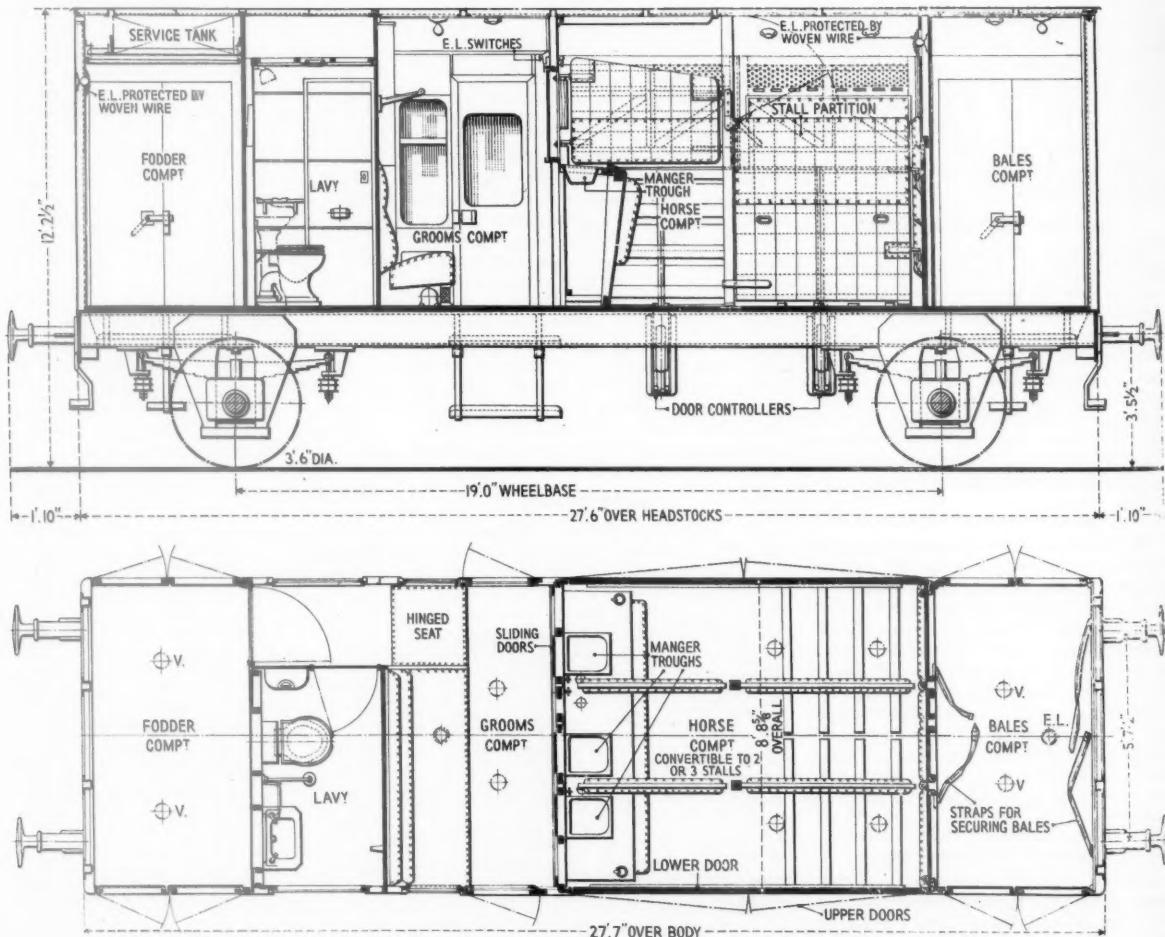
Underframe Design

The underframe is built up of mild-steel channels and angles, and is of all-welded construction, of a similar principle to that of British Railways standard carriages. The solebars are of 10 in. \times 3½ in. \times 0·36 in. rolled-steel channels, with intermediate longitudinals of 6 in. \times 6 in. \times $\frac{1}{2}$ in. T section, and 6 in. \times 5½ in. \times $\frac{1}{2}$ in. angle-section welded together to form a T section 11½ in. deep, 27 ft. 4½ in. long. The underframe is reinforced by diagonal

braces and gussets, mainly of T sections and mild steel plate.

Headstocks are fabricated from $\frac{1}{2}$ in. thick mild-steel plate, strengthened with $\frac{1}{2}$ in. thick plate stiffeners. British Railways standard wagon type buffing gear is fitted, the buffer casings being fabricated. Screw couplings and 18 in. vacuum brake cylinders are provided, a handbrake with clasp type rigging is also fitted. Wheel sets are standard as used for carriage stock, being 3 ft. 6 in. dia. on wheel tread, with 9 in. \times 4½ in. dia. journals. Axlebox and spring gear are also standard design with fabricated scroll irons.

Lighting is provided by means of a Lilliput dynamo with cut-in switch, lamp resistance, and motoring terminals, together with two battery boxes containing 19 nickel-iron cells of 45 A-hr. rating, supplying eight 15 W. lamps. Standard equipment includes communication gear, mirror, washbasin with hot and cold water supply, radiators, and ashtrays.



Principal dimensions and interior arrangements

Kent Coast Main Line Modernisation

Engineering works being carried out by the Southern Region between Shortlands and Sittingbourne and the Swale

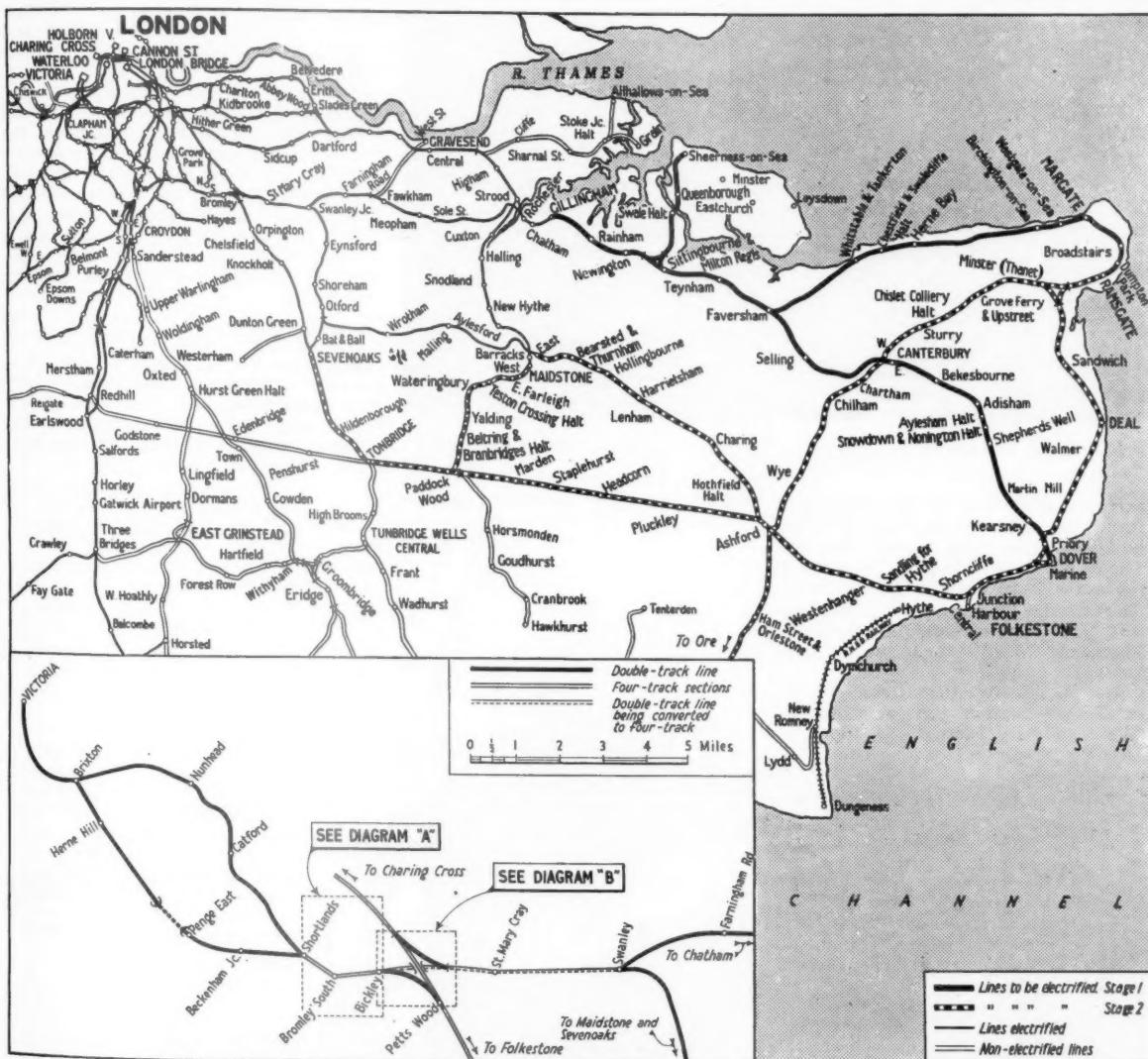
THE heavy traffic into and out of Victoria, consisting of Kent Coast, Dover via Canterbury, and the Medway Towns, besides all continental expresses and a great number of outer and inner suburban trains, has the choice of two double-line routes between Brixton Junction and Shortlands Junction, 10 miles from the terminus. Four tracks, which are inconveniently arranged for present traffic, are also in service between Shortlands and Bickley Junctions, but onwards only two are available, and electrification ends at Gillingham. Consequently, under the British Transport Commission

modernisation plan, 750-V. third-rail electrification and colour-light signalling are being installed throughout the main lines to Ramsgate via Chatham and Dover via Canterbury. Moreover, a great deal of engineering work is in hand in the shape of line-widening and other improvements to facilitate the movement of traffic. This is referred to editorially on another page.

Re-arrangement of Tracks

From Shortlands Junction to Bickley Junction the existing double tracks from Victoria and the Catford loop run together as a pair of down lines and a

pair of up lines, as shown in diagram "A" on page 248. This arrangement, therefore, forms a bottleneck; a train crossing Shortlands Junction from one side to the other completely blocks the path of all oncoming trains on both roads. To obviate this, the four tracks are being re-arranged to form two pairs of up and down lines, as shown in the lower part of the diagram, enabling trains to run straight through the Shortlands Junctions without holding each other up. Obviously these changes involve drastic alteration to the signalling throughout, and to track layout at each end of the section. More-



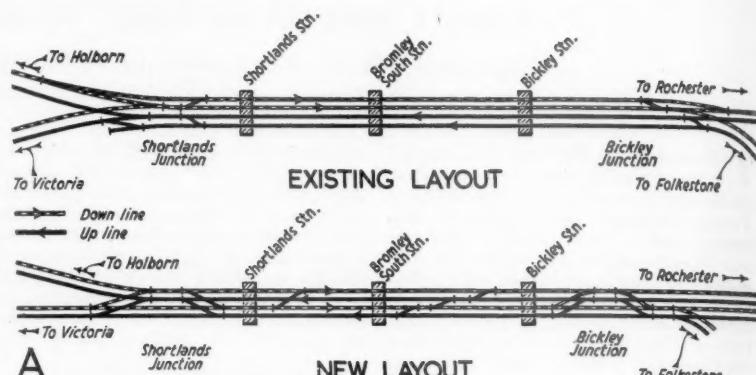
Map showing the electrification of the Kent Coast main line and (inset) the tracks available and being increased or improved, Victoria to Swanley Junction

over, the sharpness of the existing curves involves considerable speed restriction, but extensive work is being carried out to ease the curves and to permit expresses to run through at speed.

Shortlands to Bickley

At Shortlands Junction on the up side a new cutting and bank are being constructed to flatten the existing curves, a new bridge has to be built over the road, and a good deal of work is necessary at Shortlands Station. The easing of the curves will raise speeds from 40 to 60 m.p.h. on the Victoria line and from 20 to 40 m.p.h. on the Catford loop line.

At Bromley South Station on this section the switch-over of lines entails



Existing and future layout of the Shortlands-Bickley section



Formation widened at St. Mary Cray to permit laying of additional tracks

extensive alterations to the island platforms, the lines outside them, station buildings, and track layout generally. These will permit 30-m.p.h. speeds on the outer local lines to go up to 60. At the same time the station buildings will be modernised and the platforms lengthened to 810 ft. to take 12-car trains.

Alterations to the track layout at Bickley Station are being undertaken and are similar to those at Bromley South.

Bickley—Petts Wood Remodelling

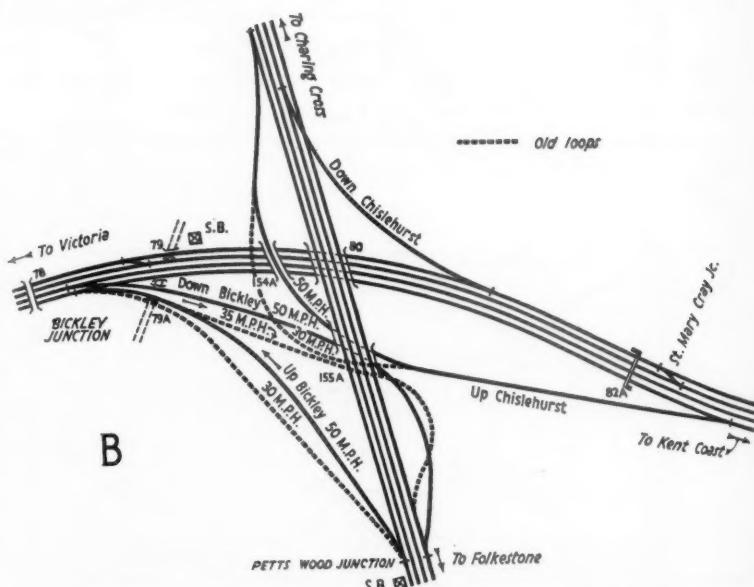
The most extensive engineering works are, however, being carried out at Bickley Junction. Here there are three main junctions close together where the Victoria, Charing Cross, Kent Coast and Dover via Canterbury, and Folkestone and Dover via Ashford lines, meet and diverge. The existing bridge carrying the Charing Cross-Folkestone over the Kent Coast line, with brick piers and a steel superstructure, consists of three spans, the present double line using the middle one. The new widened lines will pass one through each of the smaller side spans. To take the new up Chislehurst and down

Bickley loops shown in the plan, however, a new bridge is being built under the Folkestone line to accommodate their realigned tracks at a revised skew so as to secure an easement at the curves.

As will be seen from diagram "B" several flying and burrowing junctions are necessary to enable trains to run from one of the intersecting Folkestone and Kent Coast main lines to the other, as in fact most of the Continental boat trains do, namely between Victoria and Folkestone and Dover via Ashford.

The whole of this extremely complicated system of junctions has been redesigned.

Three of the loops are being re-aligned on entirely new locations so as to ease the existing sharp curves and enable the present speed restrictions to be raised from 30 to 50 m.p.h. Extensive earthworks are involved, entailing the removal of 125,000 tons by heavy



Present and realigned tracks between Bickley, Chislehurst, St. Mary Cray, and Petts Wood junctions to increase speeds



Bickley Junction, with sharply-curved Bickley loops requiring 30-35-m.p.h. speeds, on the left, now being replaced by 50-m.p.h. curves running near the camera site

earth-moving plant and the building of seven new bridges and culverts. The earthworks here appear to be substantially complete and the plant has moved further eastwards. Meanwhile work is in hand on the bridgework preliminaries. The effects of these major alterations will be particularly beneficial to the operation of the heavy boat trains.

Works between Bickley and Swanley

From Bickley Junction the Kent Coast line at present narrows from four to two tracks, but the section onwards to Swanley Junction, where the line to Maidstone East and Sevenoaks via Otford diverges, is at present being quadrupled.

This entails the construction of 11 bridges in addition to a new viaduct at St. Mary Cray. This 50-ft. high structure will consist of nine spans each of 28 ft.; the piers will be in solid brickwork carrying reinforced concrete arches and brick-faced spandrels. The foundations have already been started. As the side spans of the multi-span arched road overbridges Nos. 85 and 92 were unsuitable for the widened lines, these bridges are being demolished with explosives and replaced by single-span structures. Since all the foregoing earthwork began last August nearly half a million tons of earth have been moved, with the aid of eight excavators ranging from the 33 R.B. scooping up $1\frac{1}{2}$ tons at a time, to the 10 R.B. which digs out under half a ton with its bucket. Up to six scrapers have been in use, some of which can lift up to 14 tons at a time.

Re-building St. Mary Cray Station

At St. Mary Cray Station staggered platforms will be replaced by two new island platforms, and new station buildings will provide a booking hall at road level and other up-to-date facilities. Heavy retaining walls are being built

to accommodate the widened lines and goods yards, rather than sterilise existing land.

No major construction works or track alterations are being undertaken until after Rainham Station is passed. There the formation is being widened and compacted with earth-moving plant for laying two passing-loops $2\frac{1}{2}$ miles long to beyond Newington Station. The movement of some 100,000 tons of earth has been necessary, and two overbridges have been demolished with explosives; one of the explosions was the subject of an illustration in our issue of November 22, 1957, and in that of November 8 the Rainham-Newington widening works were briefly described. Rainham Station platforms are being extended and the Newington platforms rebuilt to accommodate eight-car

trains. The goods yard at Newington is also being remodelled.

Sittingbourne-Sheerness Branch

In addition to the main-line works, another is in hand on the Sittingbourne-Sheerness branch, at present a single line. This is being doubled for the first three miles to the Swale, where it crosses to the Isle of Sheppey. Most of the earthwork is completed or in hand for the doubling, including the widening of the cutting at Kemsley, where, as a retaining wall, a length of 1,000 ft. of steel sheet piling is being driven; several bridge extensions are also in hand.

Track

With the exception of that on the Sheerness branch widening, which will be 98 lb. F.B., all the new track will be of the 109-lb. F.B. type. For full-speed running 1 in 24 crossings with G switches will be used at Shortlands Junction and 1 in 28 with G switches at Rainham.

The completion date for the whole scheme is June, 1959, and work is well up to programme.

The main contractor for all earthworks between Shortlands and Swanley and also for St. Mary Cray Station is Geo. Wimpey & Co. Ltd.; bridgework is being carried out by the Cleveland Bridge & Engineering Co. Ltd. as subcontractors. For work on the Rainham-Newington and Sheerness branch widenings the main contractors are John Laing & Son Ltd., and Taylor Woodrow Construction Limited. The contractor for platform extensions east of Gillingham is Aubrey Watson Limited. Substations and T.P. huts are being built by the Demolition & Construction Co. Ltd.

Mr. F. E. Campion, Chief Civil Engineer, Southern Region, is in overall charge of the work.



Platform extensions at Rainham to accommodate eight-car trains

Friction Materials for Railway Braking

Research to overcome disadvantages of cast iron brake blocks

By C. Pritchard,

Manager, Railway Department, Ferodo Limited



A suburban electric train of the New South Wales Government Railways fitted as standard with composition brake blocks

THE earliest forms of brakes for railways were of the hand-lever type, applied to the locomotive and sometimes to one or two of the trailing vehicles. Initially wooden blocks were applied to the wheel treads, but as speeds and train lengths and weights increased, they were succeeded by cast iron blocks, becoming the almost universal railway braking medium.

As train weights have continued to increase, brake control has been correspondingly improved. The vacuum and compressed air braking systems were developed, designed with reference to the characteristics of the cast iron block. More recently the flexible electro-pneumatic brake has appeared; this can be applied with only a small loss of time, and its efficiency further improved by the use of relays, special valves and control devices. While the brake systems have been developed, the characteristics of the cast iron block have remained more or less the same.

To obtain adequate braking from high speeds, brake block pressures have been increased, and speed governor control giving stage braking introduced, but all at the expense of more rapid block wear and extensive wheel damage.

It would seem that any further improvement in braking can only be effected through a modification of the brake block characteristics. Variation in the structure and composition of cast iron is limited, and therefore improvements must come from the field of non-metallic materials. Any material suitable to replace the cast iron block is required to have an adequate and reasonably uniform coefficient of friction under all conditions and at all

speeds; great durability with the minimum wear effect on the wheel treads; the ability to withstand high rates of energy absorption; to be smooth and silent in operation; and to have a harmless product of wear.

The first application of a non-metallic brake block was made by the London Underground about 1907. The blocks were made by Herbert Frood, founder of Ferodo Limited, who used strips of woven cotton fabric and laminated them together with jarrah wood pegs. They were a great success for a number of years, yielding a marked improvement in tyre wear and elimination of the features attributed to the cast iron blocks that had caused an extremely high level of noise. The later surface extension of these railways enforced a return to cast

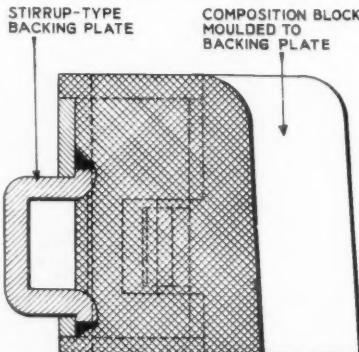


Fig. 1—Cross section through a composition brake block, showing the stirrup arrangement

iron blocks because the woven block had a low efficiency when wet. However, after some years of research, and with the encouragement and test facilities given by the then London Electric Railway, Ferodo Limited produced the prototype of their present range of moulded railway brake blocks, which are mainly compounds of asbestos and other materials with a binder of synthetic resins. The London underground railway system has continued to use a high friction type of block almost exclusively, a quality which has also found favour in more recent years in the Scandinavian countries. A lower friction quality has been preferred by British Railways, which have assisted the company in the development of the short chordal type following the experiments carried out¹ in the Ferodo research laboratories. In this form of brake block the chordal length is only 7 in. and has replaced the cast iron block of double its length on suburban electric passenger stock in this country. A block made by this last process is shown in Fig. 1; this is for a stirrup-type fitting.

Design and development work is continually being carried out by the manufacturer in its research and testing laboratories, and practical field testing is proceeding in collaboration with interested railway systems in various parts of the world. This includes present inquiries into the possibilities of more extensive use of this type of brake block on British Railways, and active collaboration with Girling Limited of Birmingham, with the supply of brake pads and in the practical testing of its railway disc brake.

High-Speed Braking

In the design and development of the Ferodo railway brake block, the aim has been not only to satisfy the more normal requirements of railway braking, but also to meet the more exacting demands of braking from high speeds.

The coefficient of friction in the Ferodo brake block is more uniform than in the cast iron block, being subject to less reduction at high speeds and without marked increase when the vehicle is coming to rest. The variation in the friction coefficient between the cast iron block and the wheel tread is due to surface temperature and it is the rise in block temperature with accompanying loss of resistance to shear that results in the diminishing retardation rate. Whereas the retarding effort of a brake should be at the maximum permitted by adhesion over the higher speed range, the cast iron block only reaches maximum effectiveness within the lower range. There is little doubt that the lower friction value of the cast

iron block at high speed is due to the softening and melting of the block surface. The less variable coefficient of friction between the wheel and the Ferodo brake block is due to the fact that the block is infusible.

The function of the brake is to absorb the energy of the train by converting the energy into heat. The brake block is capable of carrying away only a very small proportion of this heat as compared with the wheel. The heat reservoir capacity of the wheel is much greater, and rotation at speed also contributes to the heat dissipation.

The composition brake block has more of the nature of a heat insulator, enabling the block to withstand the heaviest rates of braking without self destruction. Metallic blocks warp and twist with the rapid rise of temperature that occurs during braking, resulting in increased unit pressure and the concentration of heat effect over small localised contact areas between the block face and the wheel tread. It is felt that the inert quality of the composition brake block ensures a more uniform contact with the wheel tread, and a better distribution of the braking heat over the tread area, thus lessening the risk of thermal damage to the wheel.

Effect of Water

One good feature of the cast iron block, that water has small effect on its coefficient of friction, is also shared by the composition block. However, it cannot be said that water has little or no effect upon the coefficient of rolling friction between wheel and rail, and this is important because the highest rate of braking which can be achieved is controlled by the coefficient of adhesion between the wheel and the rail. When the braking force causes more frictional force from the wheel than can be resisted by the rail, the tendency for the wheel is to slip and almost immediately slide, with consequent damage to both wheel and rail. The flatter friction characteristic of the composition brake block, with a correct brake setting, more closely approximates to normal dry rail adhesion, and reduces the risk of wheel slide.

With the Ferodo brake block, the variation in friction value between light and heavy block pressures is smaller than with the cast iron block; speed governor control is not required because of the uniformly higher coefficient of friction over the speed range. In fact, the higher level of friction permits of lower braking pressures than are normally used, often with reduction in the stopping distance, with savings in braking pressures of 50-55 per cent, and even as little as 40 per cent of tare weight of the train can be used to match the 75-85 per cent, and higher, normal for cast iron. There is consequently less stress upon the brake rigging, and less wear on pins and bushes.

The lower percentages can result in the use of smaller brake cylinders, in both compressed air and vacuum systems, reducing the amount of air

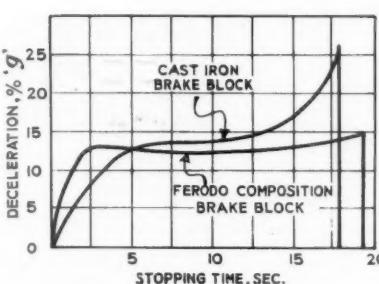


Fig. 2—Braking characteristics of Ferodo and cast iron blocks: despite longer times, stopping distances are shorter with the composition material

involved, with improvement in the charging and release times.

A comparison of the braking effects of the two types of block is shown in Fig. 2. This is a comparison of actual emergency brake applications of a train under test conditions from 50 m.p.h., being the average of 20 such stops in each case. The line showing the flatter characteristic of the Ferodo block reveals also a longer stopping time. The stopping distance, however, is less, being 880 ft. for cast iron and 830 ft. for the composition blocks. This clearly illustrates the point that the composition block has a greater retarding effect at the higher speed range.

In service braking, release of the brake would be necessary in the case of the cast iron blocks, to prevent a very rough stop or skid, which would otherwise occur.

A composition brake block is less abrasive to the wheel than a cast iron block, and the product of wear less harmful. Although the Ferodo block still wears more rapidly than the wheel, its life has been found to be equal to as many as five cast iron blocks in some instances. A recent practical demonstration was made by the New South Wales Government Railways, which have converted the whole of their Sydney suburban stock to use this type of block. On the Stockholm underground railway system, a block of similar composition and quite normal dimensions, in conjunction with electric braking, is yielding a service life of approximately two years.

Flange Wear

Sharp flanges that occur when wheels are braked with cast iron blocks are believed to be caused by the abrasive effect of the cast iron dust being fed between the side of the rail and wheel flange whilst braking round curves in the track. This form of wheel wear can only be corrected in the lathe by the removal of a substantial part of the remaining tread metal, resulting in an extravagant loss of wheel life.

The pattern of wheel wear generally experienced by the London Transport Executive on rolling stock fitted with Ferodo brake blocks is such that reprofiling of the wheels is mainly con-

fined to "topping" the flanges, and for this purpose, a ground-level lathe is sufficient to carry out the operation without the need of removing the wheels from the vehicles. Fig. 3 illustrates typical wheel profiles showing the "sharp" flange resulting from the use of cast iron, and the "deep" flange wear when composition blocks are used.

The use of the non-metallic brake block also increases the life of other components normally adversely affected by dust from cast iron blocks; the dust can damage the paintwork of coaching stock; cause rapid wear of moving parts, such as bearings, slides and pivots; and tracking and other electrical failures. The product of wear from the composition block is

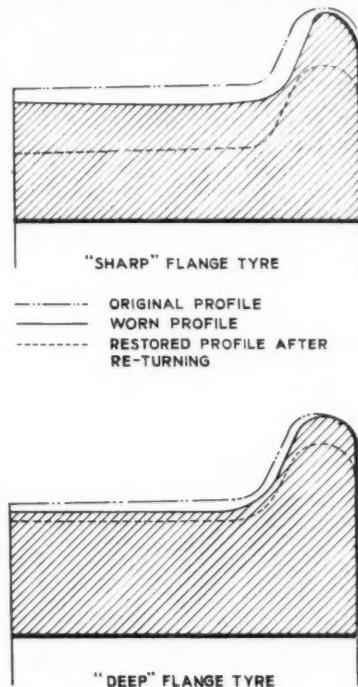


Fig. 3—Profiles of flanges showing the wear effect of cast iron (above) and composition (below) blocks

non-conducting and less abrasive, and being less than one-third the weight, is more easily carried free of the rolling stock.

The brake block itself is lighter than one of cast iron, and this with the longer life obtained, makes reblocking quicker and easier. This feature can be seen in the illustration on page 252 which shows the difference in size and weight of the non-metallic Ferodo brake block compared with the standard cast-iron brake shoes previously used on the New South Wales Government Railways electric multiple-unit trains. The saving of weight for an eight-car set is in the order of 1,600 lb.

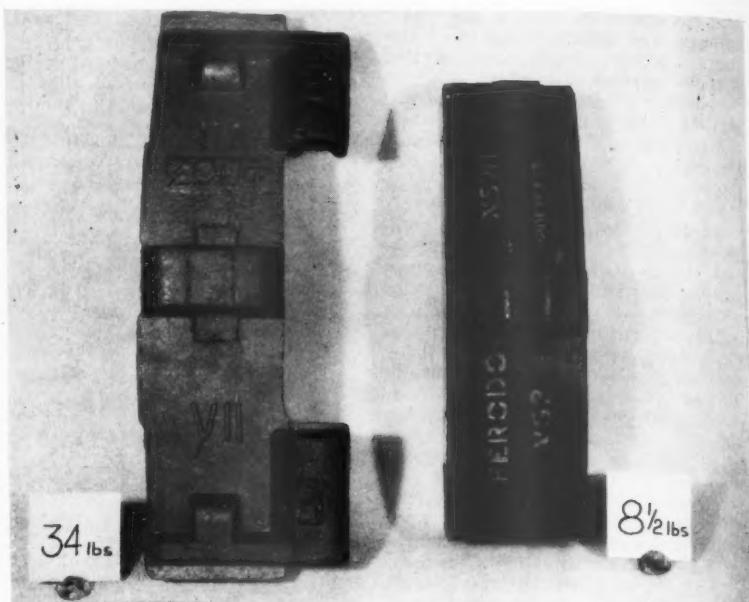
The difficulties that have been experienced with braking through the application of cast iron blocks have

naturally led to investigations being made with other systems. Numerous attempts have been made to adopt automobile-type drum brakes with internal expanding shoes of composition materials and occasionally with contracting outside shoes. Some success has attended these efforts on light-weight vehicles and a current example being the Talgo trains operating in Spain. However, there are structural difficulties in producing the design and proportions of a brake drum with the ability to dissipate heat at a rate which will prevent distortion, and also allow ease of access to the renewable parts.

Disc Brakes

In the design of disc brakes, the larger the disc diameter the greater the radial distance from the axle for the path of the brake, and consequently, the smaller the force required on the composition pads. The permissible area of the pads minimises the unit load and the rate of wear. The brake permits of rigging with practically no loss of motion, has ease of access, with fewer parts to maintain. The metal disc, usually of special grade iron, but sometimes of steel, can be a single disc or a double disc. Both types can have heat dispersion fins.

There have been a number of users of the disc brake in Europe for many years, and Ferodo Limited has provided pads in various appropriate sizes and qualities. In the U.S.A. and Canada—on the Boston & Maine Railroad and Canadian Pacific Railway—the railway disc brake has been in use for a number of years but, unlike the practice in Europe, the Budd Disc Brake and the ASF Rotor Brake are always used in conjunction with a wheel protection device. It is claimed that, with the additional safeguard of such devices and automatic sanding,



A comparison of weight and size of the Ferodo (right), and cast iron brake shoes previously used on N.S.W.G.R. electric sets

high rates of braking can be achieved under all conditions without any risk of wheel damage through sliding. In one version, however, a single brake block per wheel is added for the purpose of cleaning the wheel treads and correcting damage done by the rolling stresses, and rail batter. The latest to be commercially developed is the Girling Railway Disc Brake, with which Girling Limited and Ferodo Limited are collaborating in tests now being carried out on British Railways. The friction materials used on disc

brakes are generally of the moulded type, but are sometimes combined with woven materials where it is claimed that the combination results in an overall improved braking effect. Pads vary from single to multi-segmental type, and can be wedge or rivet fastened; a more recent development is to bond the pads to the backing plates.

Pad size and pattern, quality and disposition of the segmental form have to be assessed according to the needs of the brake. Experience has shown that the cast iron disc is the better suited for use with composition friction materials; steel discs have been found to score and tear the material.

It is thought that friction braking will remain predominant for many years, but the continued reign of the cast iron block is being seriously challenged. No one brake design will meet all the needs of braking, and a universal solution to the braking problem will be difficult to find.

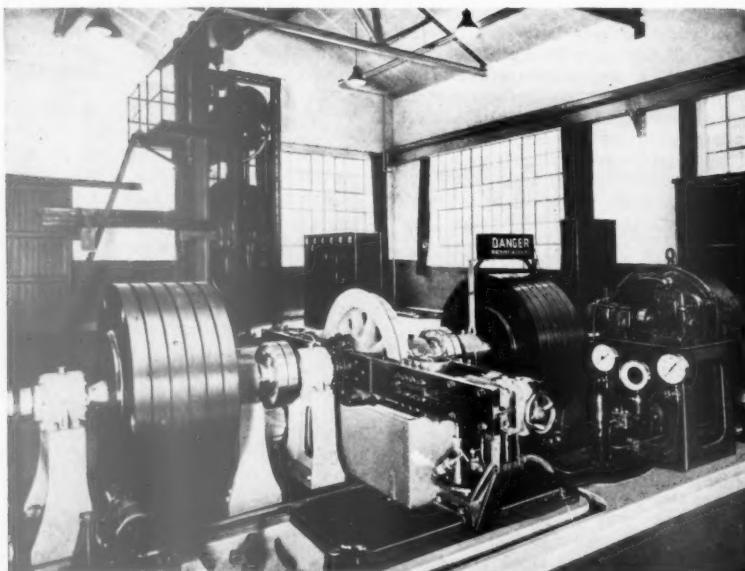
To a large number of railways the composition brake block is still an unfamiliar medium. It is certain, however, that composition materials with their almost infinite range, can contribute substantially to the adequacy of railway braking. No universal formula is yet available, but by entering upon properly organised and adequate development tests—with resources available, to the manufacturer—railways can gain the maximum benefit to be obtained from using these media.

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². A. W. Manser: *Journal of the Institution of Locomotive Engineers*, 1948, No. 237.

³. R. C. Parker: "Frictional Characteristics of Brake Blocks," *Diesel Railway Traction*, July, 1949



An inertia machine for testing blocks under wet or dry conditions

RAILWAY NEWS SECTION

PERSONAL

Mr. Louis Armand became President of the Committee of Euratom on January 7. He remains Chairman of the International Union of Railways (U.I.C.) until the end of this year.

Sir Mark Hodgson, O.B.E., D.C.L., J.P., Member of the North Eastern Area Board of the British Transport Commission,

a member of the Council of King's College, University of Durham; a member of Panel of the Industrial Disputes Tribunal; Chairman, National Savings Committee, Northern Region; Secretary of the T.U.C. Northern Regional Advisory Committee, and Assessor under the Armed Forces Act and Reinstatement in Civil Employment Tribunals. He is also a member of the Committee on the organisation of the National Coal Board, 1948.

Mr. W. H. Jenkins, Transport Manager of the New South Wales Government Railways, has been appointed Chief Traffic Manager of that system, succeeding Mr. D. J. Howse. Mr. Jenkins was awarded an O.B.E. in the recent New Year Honours List.

Mr. F. Donachy, who, as recorded in our January 3 issue, has been appointed a Member of the Scottish Area Board of the



Sir Mark Hodgson
Member, North Eastern Area Board,
B.T.C., 1955-58



Mr. F. Donachy
Appointed a Member, Scottish Area
Board, B.T.C.

who, as recorded in our January 10 issue, has retired, has been a valued member of the Commission's North Eastern Area Board since it was first set up in 1955. Sir Mark Hodgson, who was born in 1880, was apprenticed as a boilermaker on leaving school. He passed through all the offices in the United Society of Boilermakers and became General Secretary of that union in 1936, a position which he held for 12 years. He was Technical Adviser to the Admiralty from 1916 to 1918. From 1943 to 1945 and from 1947 to 1948 he was President of the Confederation of Shipbuilding & Engineering Unions. During the past 40 years he has been a member of the National Production Advisory Council for Industry; Chairman of the Northern Regional Board for Industry; Chairman of Appeals Tribunal (National Assistance Board); a member of the Committee which reviewed the organisation of the Admiralty; a Director of the North Eastern Housing Association; Chairman of Directors of the Co-operative Printing Society Limited (Newcastle Branch);

Mr. J. P. H. Stein, acting Chief Engineer of the Iraqi State Railways, has been confirmed in that position.

Mr. H. C. Friel, Q.C., who, as recorded in our February 14 issue, has been appointed Vice-President & General Counsel of Canadian National Railways, has been General Counsel for the C.N.R. since April, 1956. He joined the railway in 1943 as Regional Counsel at Moncton, and was appointed General Solicitor for the system at Montreal in 1945. Born in Dorchester N.B., Mr. Friel was educated in Moncton and at St. Mary's College, Halifax and St. Francis Xavier University, Antigonish, N.S., where he graduated B.A. in 1922. He obtained his Bachelor of Laws degree at Dalhousie University Law School in 1925, and was appointed King's Counsel in 1943. He was in private practice with the firm of Friel & Friel, Moncton, until 1943. Mr. Friel is a member of the Canadian Bar Association and New Brunswick Barrister's Society.

British Transport Commission, with effect from January 1, 1958, served as a signalman for over 20 years before becoming a full-time Officer of the National Union of Railways at the age of 41. He was elected a Member of the N.U.R. Executive Committee and has also been a Member of the General Council of the Scottish T.U.C. since 1949, occupying the position of President of the latter body in 1956-57. Mr. Donachy has served on several Government committees and is a member of the Transport Users' Consultative Committee for Scotland. The Executive Committee of the N.U.R. has consented to the secondment of Mr. Donachy as from the end of this year to enable him to be free to take up his new appointment.

We regret to record the death, at the age of 89, of Mr. Walter George Barnett. Mr. Barnett served for many years on the Great India Peninsular Railway, of which he became Chief Engineer & Acting General Manager.



Mr. T. C. B. Miller

Appointed Motive Power Officer
(Great Eastern), Eastern Region

Mr. M. Harbottle

Appointed District Engineer, Inverness,
Scottish Region

Mr. H. Kinsey

Appointed District Commercial Officer,
Liverpool Street, Eastern Region

Mr. T. C. B. Miller, Assistant Motive Power Superintendent, Eastern Region, British Railways, who, as recorded in our February 7 issue, has been appointed Motive Power Officer (Great Eastern), Eastern Region, was educated at Fulneck Boys' School near Leeds. He served his apprenticeship in Doncaster Locomotive Works of the former L.N.E.R., and, in 1935, became Locomotive Shed Foreman in charge of the depot at Helensburgh in the Scottish Area. After a period in the headquarters of the Locomotive Running Superintendent he became Assistant to the District Locomotive Superintendent at Burntisland in 1939. In 1941 Mr. Miller took charge of Haymarket Locomotive Depot, Edinburgh, and, in 1942, he moved to the headquarters of the Locomotive Running Superintendent of the Eastern Section of the Southern Area at Shenfield. He became District Locomotive Superintendent at Ardsley in 1943 and held a similar position at Cambridge from 1944 to 1947, when he became District Locomotive Superintendent at Stratford. He was re-designated District Motive Power Superintendent in 1948. Mr. Miller remained at Stratford until 1955, when he became Assistant Motive Power Superintendent of the Eastern Region, the position he now vacates.

Mr. H. S. Gordon, M.B.E., F.S.A., Welfare Officer, London Transport Executive, is retiring and the following organisational changes took effect from February 3:-

Mr. F. H. Spratling, F.I.A., Chief Establishment Officer, is now responsible to the Executive for staff welfare matters other than those relating to the Catering Service. Mr. K. R. Thomas, M.B.E., M.Inst.T., Recruitment & Training Officer, has been designated Staff & Welfare Officer.

Mr. G. W. Bradley, Principal Welfare Assistant, and Miss P. Hirst, Superintendent of Women's Welfare, report to Mr. K. R. Thomas. Mr. C. J. Cornwall, F.I.A., Principal Assistant, Staff Administration Office, becomes Staff Administration Officer. The secretarial staff of the London Transport Benevolent Fund has been attached to the Staff Administration Officer. Mr. E. C. Ottawa, R.D.I., M.I.Mech.E., M.Inst.T., Chief Supplies Officer, is responsible to the Executive for the Catering

Service, in addition to his present duties, and has been re-designated Chief Supplies & Services Officer. Mr. E. C. Gezelle, F.H.C.I., M.C.A., Catering Officer, reports to the Chief Supplies & Services Officer.

Mr. A. G. Day, A.M.Inst.T., Senior Executive Assistant in the office of the Chief Supplies & Services Officer, has been promoted Principal Executive Assistant.

Mr. M. Harbottle, who, as recorded in our January 31 issue, has been appointed District Engineer, Inverness, Scottish Region, British Railways, joined the London Midland & Scottish Railway in 1926 as an Apprentice Engineer. In 1930 he became Junior Assistant, New Works Department, in the Divisional Engineer's Office, Glasgow, and, in 1934, Resident Engineer on the Ayr Harbour South Pier Reconstruction. In 1937 he was appointed Canal Assistant to the District Engineer, Chester, in charge of the Shropshire Union Canal. Transferred to Liverpool in 1943 as Works Assistant to the District Engineer, he returned to Scotland in 1945 on appointment as Assistant District Engineer, Inverness. In 1946 he was appointed Assistant District Engineer, Perth, the position he now relinquishes. Mr. Harbottle was a founder member of the L.M.S. Permanent Way Educational Staff Panel and an Instructor for many years. He was Honorary Secretary of the Glasgow Association of Students of the Institution of Civil Engineers from 1933-1937. He is an Associate Member of the Institution of Civil Engineers.

Mr. Charles Evans has been elected President, and Mr. Sidney Greene has been elected General Secretary, of the National Union of Railwaymen.

Mr. C. W. Powell has been appointed Operating Officer and Mr. A. E. Flaxman has been appointed Commercial Officer of the Western Region of British Railways. These positions have been newly created in the Western Region traffic organisation.

Mr. C. H. Jones, Assistant to Regional Accountant, Euston, London Midland Region, British Railways, has been appointed Assistant Regional Accountant, Southern Region, succeeding Mr. R. W. Kemp who

will retire on April 30, after 46 years of service.

Mr. H. Kinsey who, as recorded in our February 7 issue, has been appointed District Commercial Officer, Liverpool Street, Eastern Region, British Railways, entered the service of the London & North Eastern Railway at Filey in 1926. He was appointed a Traffic Apprentice in 1933, and, after the completion of his training in 1936, held various positions in the Commercial and Operating Departments including dock Agent, Grimsby; Goods Agent, Guide Bridge, and, in 1944, Goods Agent, Manchester (Ardwick). In 1948, Mr. Kinsey was appointed Acting Assistant District Goods Manager (Eastern Region), Manchester, where he remained until 1951, when he moved to Liverpool Street as Head of the Terminals Section in the office of the Commercial Manager, Eastern Region. His appointment as Goods Agent, Kings Cross, followed in 1953 and, in 1954, he returned to Liverpool Street as Terminals Assistant to the Commercial Manager, Eastern Region. He became Planning Assistant to Commercial Manager, Eastern Region, Liverpool Street, in 1955, the position he now vacates.

Mr. M. F. Barbey, A.M.I.C.E., Assistant (Bridges), Chief Civil Engineer's Office, York, North Eastern Region, British Railways, who, as recorded in our February 14 issue, has been appointed District Engineer, Hull, joined the former London Midland & Scottish Railway in 1927 and served under the District Engineer, Northampton. He was transferred to the Chief Civil Engineer's Office (Structures Section) at St. Pancras in 1936. Between 1940 and 1942 he was engaged in the Bristol area on clearance of bomb damage and the restoration of various works. In 1943 he was appointed Engineering Assistant to the District Engineer, Watford, and, in 1949, was transferred to Lancaster as Chief Draughtsman. He later returned to Watford as Chief Draughtsman and for a period acted as Assistant District Engineer. In 1953 he became Assistant District Engineer, Barrow-in-Furness, in 1956, Assistant District Engineer, Leeds, North Eastern Region, and later that year, Assistant (Bridges), Chief Civil Engineer's Office, York.

Mr. R. W. Jackson, District Traffic Superintendent, Ayr, Scottish Region, British Railways, has been appointed District Commercial Manager, Edinburgh.

INSTITUTION OF LOCOMOTIVE ENGINEERS

The following names have been entered or transferred in the Register of Members of the Institution of Locomotive Engineers:—
Associate Members

Mr. N. D. Ball, Assistant for Multiple-Unit Electric Stock (New Works), Southern Region, British Railways.

Mr. C. R. Beecham, Headquarters Engineering Inspector, Doncaster, Eastern Region, British Railways.

Mr. R. K. Bose, Sectional Officer, Central Standards Office for Railways, Chittaranjan, India.

Mr. G. Grimoldby, Assistant to Works Manager, Owen & Dyson Limited.

Mr. F. Horne, Chief Locomotive Draughtsman, Chief Mechanical & Electrical Engineer's Department, Doncaster, Eastern Region, British Railways.

Mr. S. K. Kanjilal, Senior Railway Inspecting Officer, Ministry of Railways, India.

Mr. L. E. G. Parker, Draughtsman, Plant Works, Doncaster, Eastern Region, British Railways.

Mr. N. W. Pearson, Assistant Production Engineer, Locomotive & Carriage Works, Central Railway, Lallaguda, India.

Mr. C. S. Scates, Technical Assistant to Carriage & Wagon Works Manager, Stratford, Eastern Region, British Railways.

Mr. O. P. Srivastava, Assistant Mechanical Engineer, Nagpur, Central Railway, India.

Mr. T. N. Tandon, Assistant Works Manager (Production), Carriage & Wagon Workshop, Alambagh, Lucknow, India.

Mr. T. J. C. Mezger, District Locomotive Superintendent, Narragin, Western Australian Government Railways.

Mr. E. Tyler, Assistant to Stores Superintendent, Paddington, Western Region, British Railways.

Graduates

Mr. S. O. Akhidime, Overseas Trainee, Vulcan Foundry Limited.

Mr. W. G. V. Dunn, Assistant Traction Electric Machine Designer, English Electric Co. Ltd.

Mr. R. G. Hunter, District Traction Superintendent, Callao, Ferrocarril Central del Peru.

Mr. G. S. Kang, Assistant Works Manager, Ajmer, Western Railway, India.

Mr. G. W. R. Patterson, Machine Designer, Traction Machine Design Department, English Electric Co. Ltd.

Mr. N. Subramanian, Technical Assistant, Mechanical Engineering Department, Kuala Lumpur, Malayan Railway.

Students

Mr. I. Amesbury, Apprentice, Railway Works, London Transport Executive.

Mr. P. A. Engeham, Apprentice, Railway Works, London Transport Executive.

Mr. S. A. Sugden, Draughtsman, Doncaster, Eastern Region, British Railways.

Mr. A. R. Turner, Apprentice Draughtsman, Birmingham Railway Carriage & Wagon Co. Ltd.

Mr. M. G. Twitchett, Apprentice, Railway Works, London Transport Executive.

Mr. D. J. Walder, Apprentice, Swindon, Western Region, British Railways.

Transfers. Associate Member to Member

Mr. A. G. Cowley, Works Manager, East African Railways & Harbours.

Mr. A. C. E. Poole, Works Manager, Shildon, British Railways Wagon Works.

Mr. A. Turner, Area Material Inspector, Doncaster, Eastern & North Eastern Regions British Railways.

The London Midland Region of British Railways announces the following appointments:—

Mr. J. S. Wyatt to be Principal Assistant Architect, Chief Civil Engineer's Office, Euston.

Mr. A. R. Jackson to be Assistant (Electrification Works) (Modernisation Section), Chief Civil Engineer's Office, Euston.

Mr. L. H. Colebourne to be Assistant (Productivity & Work Study Section), Operating Officer's Office, Euston.

Mr. G. T. E. Wilson to be Assistant (Works Section) (Modernisation), Chief Civil Engineer's Office, Euston.

Mr. S. Grunberg to be Assistant (Works Section) (Modernisation), Chief Civil Engineer's Office, Euston.

Mr. F. Bateman to be Traffic Assistant to Divisional Traffic Manager, Manchester.

Mr. T. H. Eynstone to be re-designated Assistant District Traffic Superintendent, Barrow.

Mr. H. Pargiter to be re-designated Assistant District Traffic Superintendent (Commercial), Barrow.

Mr. J. L. Evans to be re-designated Assistant District Traffic Superintendent, Stoke.

Mr. R. W. M. Ellson to be re-designated Assistant District Traffic Superintendent (Passenger Commercial), Stoke.

Mr. A. E. C. de T. Fawcett to be re-designated Assistant to District Traffic Superintendent, Barrow (located Workington).

Mr. E. S. Firth to be re-designated Assistant to District Traffic Superintendent (Operating), Stoke.

Mr. H. G. Bill to be Assistant District Engineer, Walsall.

Mr. W. B. Haslam to be Assistant to District Engineer (Works & General), Chief Civil Engineer's Office, Blackburn.

Mr. V. C. Archer to be Stationmaster, Leicester (Central) (i/c Belgrave Road).

Mr. F. A. Jackson to be Goods Agent, Burton-on-Trent.

Mr. C. G. Palmer, District Motive Power Superintendent, Peterborough, Eastern Region British Railways, has been appointed Motive Power Officer in the Office of Line Traffic Manager (Great Northern), Kings Cross.

Mr. C. A. M. Peaty, Assistant District Commercial Manager, Swansea, Western Region, British Railways, has been appointed District Commercial Officer, Lincoln, Eastern Region.

Mr. A. E. Hoare, Assistant Motive Power Superintendent, Southern Region, British Railways, has been appointed Mechanical Engineering Assistant in the Chief Mechanical & Electrical Engineer's Department of that Region.

We regret to record the death, on February 23, of Mr. H. J. Comber, Chief Officer for Labour & Establishment, London Midland Region, British Railways, 1943-50.

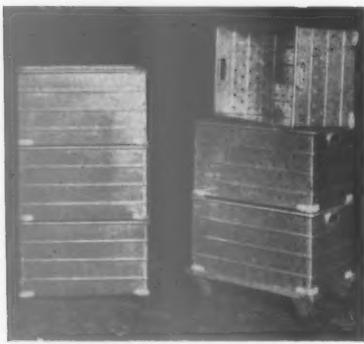
As from January 1 last it was decided to co-ordinate the various engineering activities of Coras Iompair Eireann under one direction and authority. The Chief Engineer, responsible for all the Board's engineering activities, is Mr. D. Herlihy. He has the following Assistants: Mr. P. T. Somerville-Large as Deputy Chief Engineer (Civil); Mr. L. Collins as Deputy Chief Engineer (Mechanical); and Mr. A. K. McAuley as Deputy Chief Engineer (Road Rolling Stock). The Signal & Electrical Department has been merged into the Civil Engineering Department. Mr. O. V. S. Bulleid, Chief Mechanical Engineer, is available to help to introduce and establish the new organisation.

Mr. R. F. Harvey, Chief Operating & Motive Power Officer, British Railways Central Staff, British Transport Commission, has retired. Reproduced below is photograph of a presentation made by Mr. R. C. Bond, Chief Mechanical Engineer, British Railways Central Staff, B.T.C., on behalf of the members of the B.T.C. Senior Officers' Mess. Picture shows (centre group): Mr. Harvey; Mr. J. W. Watkins, Member, B.T.C.; Mr. H. F. Pallant, Freight Officer; Mr. A. P. Hunter, formerly Chief Operating Superintendent, North Eastern Region, British Railways, and Mr. R. C. Bond. Others in the picture are (left to right): Messrs. R. Thompson, Motive Power Officer; E. J. Vipond, Operating Officer; J. H. Fraser, Chief Signal Engineering Officer, and L. B. Marson, Development Officer.



Mr. R. C. Bond, Chief Mechanical Engineer, B.T.C., makes a presentation to Mr. R. F. Harvey, Chief Operating & Motive Power Officer, British Railways Central Staff, who has retired (see paragraph above)

NEW EQUIPMENT AND PROCESSES



Light Alloy Handling Equipment

A RANGE of handling and transport equipment manufactured in light alloy includes containers and bins of various designs to suit the handling requirements of different industries.

Among these is a general-purpose handling container, the K200 Hanbox; a collapsible pallet-type container, the P554 Palcon; a packing case, the K402 Trabox; and a storage or handling bin, the K261, Conibin.

The K200 container is available in a heavy-duty version, and this is of application to railways for general handling duties on stations and so on. It is constructed of high duty light alloy, heat-toughened, copper free and corrosion resistant, in either anodised or natural alloy finish. All panels are strengthened by a beading process, the upper edges being cold-rolled-hardened either inwards or outwards, and for extra tough duty the rims can be reinforced. Smooth "cut-proof" hand grips facilitate handling, and panels can be perforated for ventilation or drainage. Fitted with patent corner base protectors, containers can be stacked rigid.

It can be used with standard pallets, and can be embossed with depot name or serial number without charge. The heavy-duty size, 28 in. x 19½ in. x 16 in. (high) weighs 12 lb. approx. Two versions of this container can be seen in the illustration above. Their versatility can be

increased by the use of a special four-wheel castor chassis frame on to which they can be securely placed as shown.

The K261 Conibin is designed for stores and works handling. It is constructed in a similar alloy to the K200. Both floor and wall panels are strengthened with beading. When empty the Conibin nests, thereby economising in space. For rigid stacking there are two alternative methods. Slotted hardwood slide bars riveted to the base allow cross-stacking, thus providing easy access to contents; alternatively, a movable stacking bar is mounted at each end of the bin, providing firm stacking for the bin above. The stacking bar throws to the rear to facilitate nesting when empty. Plastic "firm grip" coverings on stacking bars can be supplied in different colours for recognition purposes.

It is at present made in two standard versions; both are identical in size but one is of thicker material. With a weight capacity of 110 lb. they measure top, 28 in. x 17½ in.; base, 25½ x 14½ in.; depth, 7½ in.; weight, 6½ or 7½ lb. The bin container can be seen in the accompanying illustration.

The items described are representative of the present range of the manufacturer; special sizes and designs can be made to order to suit a customer's particular requirement.

Full details may be obtained from the manufacturer, Light Alloy Construction Limited, Mowden Hall, Darlington, Co. Durham.

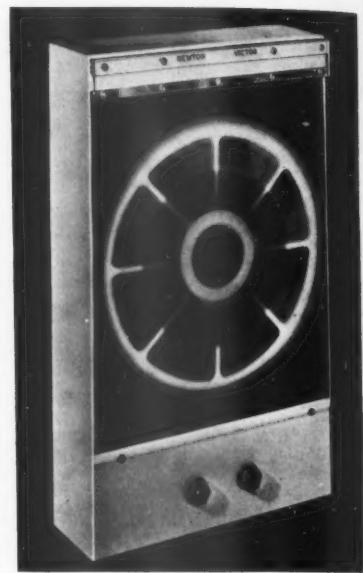
Industrial Radiograph Illuminator

THE Maxilume illuminator for examining radiographs up to 14 in. x 17 in. has recently been introduced. The design incorporates improvements to ensure greater accuracy and convenience for the critical examination of industrial X-ray negatives, as used for inspection of boiler welds, and so on.

A feature is the use of 15-W. colour-matching fluorescent lamps giving an evenly diffused, glareless light of true north daylight character with a complete absence of flicker. These are fitted with a special plastic diffuser panel of high light transmission characteristics.

It is of welded sheet steel construction, with a cream vellum stoved finish and is supplied wired, complete with two 15-W. 18-in. fluorescent lamps, lampholders, auxiliary control gear, rotary switches, and 6-ft. of mains cable. Operation is from 200-250 V., 40-60 cs. a.c.

The film to be examined is held in position by means of a ball-type film holder mounted in a clear Perspex bar which enables the very top edge of the film to be seen. This ensures easy insertion, and firm retention of the negative without scratching or marking. The narrow back to front measurement of 4½ in. is suitable for surface or recessed wall mounting; the absence of any surround to the viewing panel allows illuminators to be banked to form multiples of any desired number with individual control and freedom from dark spaces between viewing panels. The unit is suitable for desk or shelf, or wall mounting. When heavier densities up to 2·5 are to



be examined, it can be fitted internally with a high-intensity photoflood lamp so arranged that the tubes are switched off when the lamp is used. A dimming device can also be supplied; an extra control switch is then provided on the front panel as shown in the illustration.

This device provides a means of regulating light intensity from full to 15 per cent of maximum. The illumination from the viewing panels remains uniform, with complete absence of irritating flicker; also complete starting is possible at the reduced intensities.

The Maxilume illuminator and accessories are available from stock. The standard unit is £13; with a dimming device it is £15 15s. It is manufactured by Newton Victor Limited, X-ray department of Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17.

Coating for Viscous Filters

A COATING has been developed for impingement-type metal air filters, and is available in this country. The product is used by 28 American railways and is now under test by British Railways. Known as Caltex Filter Coat, it is a specially-treated oil containing synthetic additives and gives, it is stated, a high "wicking" rate, in some cases over 50 per cent. greater than other products; it also remains on filters without "bridging" the spaces of the wire mesh at a wide range of operating air temperatures.

The product has a minimum flash point of 250 deg. F. and consequently is free of any fire hazard. It has no unpleasant or toxic odour with normal operating temperatures, is fully stable in use and storage, and is completely non-corrosive.

The filter coating is fluid above temperatures of 160 deg. F. and is best applied by immersing filters in a bath maintained between 180 and 200 deg. F. On cooling it becomes semi-plastic, providing an



evenly-coated adhesive to the wire mesh surfaces.

The two normal methods of applying the coating are hot dip and centrifuge, as used in the Farr Oiler, and hot dip and oven drain. This latter method is fully automatic, dirty filters being cleaned and re-oiled in one continuous operation.

Full details of the Caltex Filter Coat can be obtained from the distributor in this country, the Regent Oil Co. Ltd., 117, Park Street, London, W.1

Fire-Resistant Fibre Board

A PROCESS of treating regular-grade fibre insulation board imparts to it fire-resistant properties.

The board is being marketed under the trade name Pyrestos. It is not a particular make of board; the name is used to indicate standard boards which have been pressure-flameproofed with Pyrolith flame retardant.

Spread of flame tests at the Fire Research Station show that Pyrolith-treated boards conform with class "1" as defined by B.S.S. 476, Part 2. This class applies to surfaces of very low flame spread, and after a rigorous test the treated board failed to show any flame whatever. Its resistance is now claimed to be at the top end of this rating.

An important advantage of pressure-treating the material is that it can be cut or broken without revealing untreated fibres. With surface-applied flame retardants, for example, risks can be caused, by accidentally washing off the retardant or failure to treat the back face of the board. Pyrolith does not impair the other properties of the board; the thermal insulation efficiency of fibreboard is actually improved.

The treated fibreboard is very suitable for the insulation of works buildings for thermal insulation to give the maximum benefit from the heating system. Another application is for the insulation of passenger rolling stock.

Further details of the process can be obtained from the licensing company, Hickson's Timber Impregnation Co. (G.B.) Ltd., Castleford, Yorks., or from the manufacturer, C. V. Creffield & Co. Ltd., Leyborne Wharf, Horton Bridge Road, West Drayton, Middlesex.

Small Generating Sets

A RANGE of small portable generating sets powered by the light-weight Drayton diesel engine can be used inter alia for floodlighting on breakdown and repair sites, and charging batteries of diesel railcars without their removal from the vehicle.

The power:weight ratio of these sets, which have outputs of 3 kVA. at 50 cycles and 3.5 kVA. at 60 cycles, is 135 lb. per kW. and 115 lb. per kW. respectively.

They can be arranged for outputs at any standard a.c. single-phase voltage. Three-phase, or 3-wire single-phase, or d.c. models can be supplied at extra cost.

The Dexter range is divided into two main types, electric and hand start. The "B" type, electric starting version has the manufacturer's normal electric starting system, which consists of two 12-V., 54 A. batteries operating starting windings within the alternator and a push-button switch mounted on the control panel. The "D" type, manual start is put into operation

with a conventional car-type handcrank. Remote stopping can be supplied as an extra. The plant is available in stationary, portable and two-wheel mobile versions. The portable version is illustrated.

The Drayton diesel engine is the type 34, a single-cylinder, air-cooled, two-stroke model, which employs Uniflow-type air scavenging with crankcase pre-compression. It has an output of 5.5 b.h.p. at 1,500 and 6.5 at 1,800 r.p.m. The use of aluminium alloy castings assists in obtaining reduced weight. A 2-gal. fuel tank is mounted on the unit.

The generator has drip-proof enclosure, built to the B.S.S.2613/1955; it is a continuously-rated, self-exciting and self-regulating machine. The switchboard is of the totally-enclosed type, fitted with a removable cover giving access to the control gear, terminal and connection blocks.

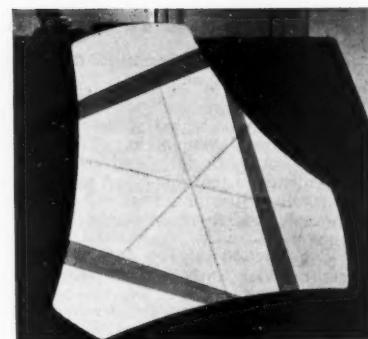
Full details of the Dexter generating sets may be obtained from the manufacturer, Dale Electric (Yorkshire), Limited, Electricity Buildings, Filey, Yorks.

Perspective Drawing Board

A SELF-CONTAINED lightweight drawing board which facilitates the construction of perspective drawings has been developed; it is being marketed under the name, 3D Drafting Machine. Of application for the illustration of complete components for workshop or technical purposes, building interiors, and so on, the instrument is made of Tufnol and p.v.c.

As may be seen from the illustration, the drawing board is shaped to incorporate three arcs. The white surface is imprinted with three relevant measuring lines intersecting at the focal point. The lines are scaled in convenient units which diminish towards the vanishing point. Each arc has a corresponding transparent straight edge which is designed to traverse the arc and automatically ensures that the edge will always subtend towards its vanishing point.

The three measuring lines lie in the three intersecting planes of the perspective, each plane giving a different foreshortening with respect to the observer. One line measures the vertical distances, or height, on the object to be drawn; the



other two lines measure the two horizontal distances, width and depth. The drawing surface of the board is mounted on a base which allows the board to be turned to six positions, each producing a different view of the object.

Full details of the 3D Drafting Machine can be obtained from the manufacturer, Mativa Drafting Machines Limited, Highlands Road, Shirley, Solihull, Warwickshire.

Polythene Storage Bin

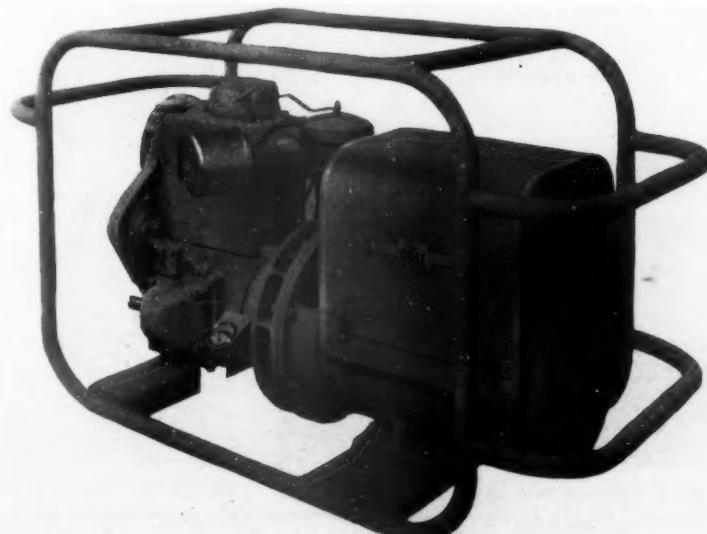
THE TB. 250 storage bin is an addition to the Kabi range of products of this nature. Moulded in semi-transparent polythene, it can be used for handling and storage of materials and components in workshops.

The bin combines strength with chemical inertness, flexibility at low temperatures and resistance to water vapour. It is light in weight and quiet in operation, the rounded corners facilitating cleaning.

There are no dangerous rough or sharp edges. Bins of this design can be nested when empty and are stated to be practically indestructible.

The size is 13 in. by 7 in. by 3½ in. They can be supplied in green or white, and with an index card holder if required.

Further details can be obtained from the manufacturer, Precision Components (Barnet), Limited, 13, Byng Road, Barnet, Herts.



Improvements at Shaftholme Junction, N.E. Region

Re-alignment to allow of speeds up to 100 m.p.h.

Modernisation work at Shaftholme, in the North Eastern Region of British Railways is nearing completion. This consists of track, bridge, and signalbox improvements on the East Coast main line at Shaftholme Junction, four miles north of Doncaster and the most southerly main line point in the North Eastern Region (and the junction of the former Great Northern and North Eastern Railways before grouping).

The purpose of the improvement is primarily re-alignment of the track to give a curvature suitable for train speeds up to 100 m.p.h. Previously, the curvature at this point necessitated a permanent speed restriction of 60 m.p.h. The opportunity has been taken to embody provision for future electrification.

Reconstruction of Overline Bridge

Associated works include reconstruction of bridge No. 345 which carries the Barnby Dun line over the East Coast main line; this, with the junction connections serving the Askern Branch, had become due for renewal, which afforded a good opportunity to effect the much-desired improvement.

To obtain the track curvature required, track slues to a maximum of 8 ft. 3 in. have been carried out by widening the earthwork formation on the up side and suitably positioning new overbridge abutments.

Previously, the main line passed through the centre of the three spans of the overbridge, the two short side spans being empty. The superstructure of the bridge consisted of wrought-iron side and centre girders with track on longitudinal timbers carried on a concrete-filled trough floor.

The original intermediate piers have been removed and new abutments and wing walls constructed. A new single-span superstructure, which gives increased headroom of 2 ft. 5 in. to provide adequate clearance for overhead power contact wires, has been erected. It is of three-girder type with joists-in-concrete deck, carrying ballasted track.

Because of the increased height of the

new superstructure and the increased construction depth, it has been necessary to lift the tracks of the Barnby Dun Branch by nearly 3 ft., and in view of the flat terrain, this has necessitated lifting the lines for 500 yd. on each side of the bridge, to avoid too severe a gradient.

The associated earthworks have involved provision of extra width of formation for the main line, to accommodate an 8-in. additional depth of ballast and also cable ducts and columns to carry overhead electric power supply.

The maintaining of good longitudinal level of the track for three-quarters of a mile south of the bridge presented difficulty. Settlement had been caused by the combined effect of the proximity of waterlogged borrow pits and soft clay overlying running sand at various depths which composed the embankment and its foundation. Local settlement had for some time occurred on the Barnby Dun Branch and remedial measures had become necessary.

In both cases the borrow pits are being filled in with heavy insert material and berms are being raised against the existing slopes. Where necessary, ditches will be cut to improve drainage adjacent to the embankments. Eighty thousand tons of filling material are being used in the borrow pits and berms; half this is being obtained from a colliery tip and the remainder, slag waste, is being brought by rail from Scunthorpe.

Gadall excavating machines are being used to discharge the slag waste from railway wagons to dumps adjacent to the site.

New Signalbox

The old Shaftholme Junction signalbox has been replaced by a new box with a steel skeleton frame on a concrete raft; the framework is covered in aluminium sheet to the lower portion, with the upper portion mainly glazed all round, with cedar board panels above and below the windows. The internal linings are in asbestos board and the whole structure can be raised as necessary by jacking up

under main stanchions, so maintaining the correct relationship between rail level and the "lead-off" opening for signalling connections at the front of the box. This form of construction was necessary because the area is subject to subsidence from colliery workings.

Modernisation of Doncaster Carriage Works

Modifications to the Doncaster Carriage Building Shops, Eastern Region, are being carried out in connection with the construction of multiple-unit electric stock for London suburban services. Eight additional building stages are required to facilitate the fitting of electrical equipment, and these have been provided in one of the bays in the Building Shop. This has involved the fitting of roller shutter doors in the shop wall and the insertion of two sets of metals in the shop floor, each capable of accepting four vehicles. This work is being carried out by C. R. Price Limited, of Doncaster.

The general layout of the various facilities associated with the new coaching stock construction has been altered to meet the new conditions, including the withdrawal from service of certain existing machines and the acquisition and installation of several entirely new machines.

One of these machines is a 4-ft. Loudon wheel lathe which has been supplied by the makers, the Scottish Machine Tool Corporation Limited, Loudon Works, Johnstone, Renfrewshire to replace a life-expired machine.

It will provide facilities for turning the tyres in wheel sets fitted with roller bearings and will include a number of unconventional features. The chief of these are tooling arrangements which will permit the use of high speed steel or, alternatively, tungsten carbide cutting tools with appropriate continuous geared feeds and speeds to accommodate either arrangement. The headstocks are fitted with spring-loaded sleeves which facilitate the loading and unloading of wheel sets. On conventional machines this operation is carried out by means of adjustable sleeves situated at the ends of the two headstocks.

A centralised push-button control



Old track with the new curve alignment pegs in position; also the old bridge and piers of the new bridge partially completed



The new bridge (looking north) and the new re-aligned track in position; the right-hand pier of the old bridge completely, and the left-hand pier partially removed: new signalbox in distance

system is provided on a column at the centre of the operator's side of the machine to facilitate the movement of slides and so on, by power operation, and also to cover the main machine controls.

Special Loading System

An arrangement is included for loading and unloading wheels into the machine to obviate the use of either a central jack or an overhead crane. This consists of two radial arms on a common shaft, capable of lifting a complete wheel set from a set of metals at right angles to the machine centre line and lifting these into position, inline with the headstock bore with a following mechanical movement for the insertion of the journal and collet into the fast headstock of the machine.

The faceplate supports are provided with hydraulic operation to enable wheel sets fitted with roller bearing axleboxes to be dealt with for tyre turning without removing the axleboxes and, hence, exposing the bearings. This additional facility is not included on conventional machines and is required for dealing with wheel sets from the vehicles used for example on the "Talisman" trains, and many diesel railcars.

The modernisation work at the Doncaster Carriage Works has been undertaken by the staff of the department under the supervision of Mr. A. K. Terris, Chief Civil Engineer of the Region.

Rail-Mounted Concrete Mixing Unit in the L.M. Region

A concrete mixing unit which can produce concrete continuously as it moves along the railway tracks is being used as part of the special electrification work trains which have been developed to erect supporting steelwork for the overhead conductor wires on the London Midland Region main line electrification project between Euston, Birmingham, Liverpool and Manchester.

The unit carries its own supply of cement in bulk and is supplied with sand and gravel from 50-ton hopper wagons, which are coupled to the unit and with

water from a water carrying vehicle which is coupled to the opposite end of the unit. The sand and gravel are fed through to the mixing unit by a system of conveyor belts driven electrically from a generator van also attached to the train. All the ingredients are fed into a rotating screw, which ensures correct measures of sand and gravel, and correct quantities of cement and water are then added and as the mixture is forced along the concrete mixers it is fully mixed and delivered to the outlet spout in its correct consistency.

The concrete can either be poured out through a movable spout direct to a line-side job or alternatively supplied to a special placing unit situated alongside the mixer. This placing unit can store the concrete and also deliver it through a spout of its own. For filling large foundations both the placing unit and the concrete mixer can deliver concrete simultaneously.

Continuous Operation

The new concrete mixing unit, in conjunction with the other electrification works trains, which have been used to the present time, can be used to erect the steel masts for the overhead equipment in a continuous operation as the trains pass along the track. Trains can plant a mile of masts on one side of the track in a daily period of six hr. The full erection train consists of three sections: the auger borer unit, the mast planting unit, and the concrete mixing unit.

The mixing unit was built by Whartons Engineers Limited to the design and requirements of the British Insulated Callender's Construction Co. Ltd., and the London Midland Region of British Railways.

RAIL MOVEMENT OF EQUIPMENT FOR NUCLEAR POWER STATION.—Part of the core of the fast reactor at Dounreay power station was consigned recently by rail from Farnworth, Lancs., to Thurso, the railhead for Dounreay. The consignment was loaded in a container and accompanied on its journey by British Railways and manufacturers' representatives. Special police precautions were taken.



Rail-mounted concrete mixing unit showing, in the background, hopper wagons containing sand and gravel for supplying the unit

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Staff and Labour Matters

Railway Wage Claims

The claims of the N.U.R., A.S.L.E.F., and T.S.S.A. for improved rates of pay for railway salaried and conciliation staff will be heard by the Railway Staff National Tribunal, the final stage in the negotiating machinery, on March 17, 18, 20, and 21.

The N.U.R. is asking for a substantial increase for all salaried and conciliation grades; the A.S.L.E.F. are seeking an increase of 10 per cent for locomotive grades; and the T.S.S.A., on behalf of salaried staff, asks that the rates of pay of such staff shall be improved with the object of maintaining the purchasing power of salaries.

The members of the Tribunal will be Sir John Forster, who will be the Chairman, and is President of the Industrial Court; Mr. A. J. Espley, former Managing Director of Timothy Whites & Taylors Limited, who has been associated with a number of arbitration cases; and Mr. E. Hall, National Union of Mineworkers, Lancashire Area.

A claim from the A.S.L.E.F. for a 40-hr. week for locomotives grades will be heard by the Railway Staff National Tribunal on March 24.

London Busmen's Wages

The claim for a 25s. a week increase for London Transport busmen was considered by the Industrial Court on February 24 and 25. Sir John Forster presided over the court; with him were Mr. George Thorneycroft, former General Secretary of the T.S.S.A., and Mr. Kenneth Scott.

Mr. H. R. Nicholas, Assistant General Secretary of the T.G.W.U., submitted that wages increases for London busmen have lagged behind the cost of living. Quoting the London and Cambridge Bulletin index figure, he said this stood at 100 in 1938 compared with 270 at 1957. Since September, 1939, increases in rates of pay in the Central Buses section ranged from 115 to 129.2 per cent and in the Trolleybus section from 124.2 to 136 per cent, which was considerably below the rise in cost of living.

The reply to the claim on behalf of the London Transport was given by Mr. Anthony Bull, Member of London Transport Executive.

Recruitment

He pointed out *inter alia* that if London Transport was to continue to discharge its statutory duty to provide an adequate service, the money to provide an increase in pay could only be provided by an increase in fares. The present rates of pay of London busmen, he stated, did not seem to be a deterrent to recruitment and several men had asked to return.

PROGRESS ON GLASGOW SUBURBAN ELECTRIFICATION.—The laying of foundations for the overhead wiring system for the Glasgow suburban electrification scheme in the Scottish Region of British Railways is continuing for three weeks; it began on February 24. Work is being carried out between Dalmuir and Singer after the peak morning services have finished and before the evening rush begins. During this period there may be slight delays on the Glasgow-Helensburgh line.

Parliamentary Notes

Smoke from Locomotives

An order of the Ministry of Health & Local Government to bring into operation, as from June 1 next, certain provisions of the Clean Air Act, including the prohibition of dark smoke from railway engines and ships and other smoke nuisances, was discussed in the House of Commons on February 19.

Mr. Gerald Nabarro (Kidderminster—C.) said that chronic atmospheric pollution had been much in the mind since the railway accidents at Lewisham and Dagenham, "both of which could be said to be directly attributed to the very thick fog at the time." It would be many years before this stage of affairs might be cleared up, but a good start had been made, and they should endeavour to relate the position of this Order under the main Statute to the fuel and power position.

Mr. Denis Howell (All Saints, Birmingham—Lab.) said that it was not much good having an army of smoke inspectors going round the cities demanding that householders cease the emission of black smoke from their chimneys when hospitals and locomotives still were emitting much black smoke, and local authorities could not obtain speedy redress. He assumed that the Ministry of Housing & Local Government had had from the Minister of Transport & Civil Aviation assurances in this respect which would be more satisfying than the ones which were given during the Committee stage of the Clean Air Bill.

"We are all aware," Mr. Howell went on, "of the great palls of smoke which hang over locomotive yards. If this Order will help to prevent the emission of black smoke from locomotives, that is all to the good. However, in our earlier discussions we were told that the B.T.C. complains about the quality of fuel it receives, and says that the smoke is caused not so much by the railway operatives as by the fuel, because it is not satisfactory."

Grants for Tube Railways?

If it was proper for the Minister of Transport to give a grant in respect of new roads, why should the Minister not make a grant for an underground road? If he were to make a grant up to the amount normally made for major street improvements, or (whatever were the less) to pay the service on the debt incurred in building the tube, that would be a solution preferable to building many new roads in London.

He had never taken the view, Lord Latham added, that nationalised industries should be subsidised, nor that they should subsidise private industry, as the Coal Board was doing; but he did not think that this suggestion of a grant could be regarded as a subsidy. New tubes would enable traffic on the roads to be speeded up with much economy and avoidance of waste. In the result, he did not believe that the total cost of the grant for the construction of these tubes would necessarily be larger than the total which ultimately will have to be incurred on large street improvements.

Lord Mancroft, Minister without Portfolio, stated in reply that modernisation of the railways and increased facilities for heavy goods traffic might bring some traffic off the roads on to the railways. It might be that development of atomic energy would change the pattern of traffic demands to a certain degree. They must always have flexibility to meet these problems. The London tubes were a little

outside the problem he was discussing at the moment. There was a principal major difference in that Underground passengers paid for tickets and were in a different class from ordinary road users.

Lord Latham: They also pay for their tickets on the buses.

Lord Mancroft: But they are travelling in that particular vehicle. The problem is not quite a parallel one. I accept the validity of the argument that it will relieve the congestion on the roads over the top of the tube.

Congestion in the Southern Region

Lord Latham, in a discussion on the acquisition of land for roads in the House of Lords, on February 13, stated that the situation in the Southern Region suburban area was almost desperate. Overloading during the peak hours (no more than 4 to 4½ hr. out of, say, 18) was most serious; if there was the slightest mishap or interruption of the service, something very near chaos at once supervened; this was not from any fault of railway administration, but because the traffic which had to be carried in those few hours of the day greatly exceeded capacity. This meant a loss of millions of hours of work, vastly exceeding in total the loss of hours of work through all the strikes and disputes in industry and commerce together.

The situation as to Underground and road passenger traffic was no better, he added. It was a common fallacy that, because of overcrowding, peak-hour traffic was profitable to London Transport. It was not, because of the provision which has to be made of equipment, roughly 25 per cent of which was idle for the rest of the day.

Lord Latham argued in favour of new tube railways, because of the high cost of street improvements. New tubes would relieve not only the acute congestion in the peak hours on the present tube lines, but also the roads. Route "C" should be pressed forward with all possible speed.

Questions in Parliament

B.T.C. Capital Expenditure

Sir Wavell Wakefield (St. Marylebone—C.) asked the Minister of Transport & Civil Aviation on February 19 how much of the new capital required by the B.T.C. since it was nationalised had been provided by the Commission itself; and how much had been provided out of public funds.

Mr. Harold Watkinson, in a written reply: The capital expenditure of the B.T.C. on fixed assets since its formation, on January 1, 1948, amounts to about £730 million. Towards this about £430 million has been provided by the Commission itself from depreciation provisions, changes in the levels of internal funds and cash and investment resources; issues of British Transport Stock to the public under Government guarantee provided £200 million, and the balance of £100 million was met by the taking of Exchequer advances under Section 42 of the Finance Act, 1956.

Railway Services in Kent

Mr. A. G. Bottomley (Rochester & Chatham—Lab.) asked the Minister of Transport & Civil Aviation on February 13 if he would authorise a speeding up of the capital programme for the modernisation of British Railways services in Kent.

Mr. Watkinson, in a written answer: It is for the B.T.C. to determine the details

of its capital programme within the limits set by the Government. I understand that the Commission hopes to be able to maintain the present programme of railway electrification in Kent.

Customs Examination at Victoria

Mr. M. Lindsay (Solihull—C.) asked the Secretary to the Treasury on February 20 why only four Custom officials were available for 1,300 passengers returning from the Continent on the train which reached Victoria Station at 2.30 p.m. on January 12, 1958.

Mr. J. E. S. Simon: Two trains arrived at about that time carrying 1,084 passengers, all of whom, with their baggage, had already been cleared through the Customs at Folkestone. There were six Customs officers on duty at Victoria, but they were concerned only with baggage registered through to Victoria.

Mr. Lindsay: It is quite common to register baggage through. According to my information, the last group of these travellers spent more than 14 hr. before passing through the Customs. Could not better arrangements be made because this has a very unfortunate effect on foreign visitors?

Mr. Simon: The information I have been given is that nearly all the baggage was cleared within half an hour of its being unloaded from the train. The amount of Customs facilities which can be deployed must depend on factors such as the cost of making the officers available.

STOREY BROS. & CO. LTD.—The directors of Storey Bros. & Co. Ltd., manufacturers of printed plastic sheeting and coated fabrics, announce that since January, they have formed two small selling companies to take over existing agencies in Norway and Sweden. These are Storeys of Lancaster A/S, registered in Oslo, and A.B. Storeys of Lancaster, registered in Stockholm. The control of both is in the hands of the company in Lancaster.

BRUSH ELECTRICAL ENGINEERING CO. LTD. AT THE ELECTRICAL ENGINEERS' EXHIBITION. The Brush Electrical Engineering Co. Ltd. of Loughborough will be exhibiting a wide range of their products at the Electrical Engineers' Exhibition at Earls Court, London, from March 25-29. They will include a full size mock-up of a diesel-electric locomotive cab representing a facsimile of the British Railways, Eastern Region, type 2 1,250-h.p. locomotive, 20 of which were ordered from Brush Traction Limited, and a complete control cubicle.

WESTERN REGION WOMEN'S FIRST AID COMPETITION.—The British Railways, Western Region, Women's First Aid Competition was held recently at Old Oak Common Hostel. Doctors M. M. Scott and E. J. Selby of London were the adjudicators, and the subsequent proceedings were presided over by Mr. S. G. Ward, Regional Establishment and Staff Officer. The trophies and prizes were presented by Mrs. Ward. The vote of thanks to the adjudicators and other helpers was proposed by Mr. J. W. J. Webb, Regional Accountant. The Class 1 section was won by the Newton Abbot team, which will now compete in the British Railways, Docks & London Transport (Railways) Competition for Women, being arranged by the St. John Ambulance Association at the Central Hall, Westminster, on June 4. The Class 2 section was won by the Paddington "B2" team.

Contracts and Tenders

Diesel-mechanical shunting locomotives for Spain

W. G. Bagnall Limited have received an order for two 105-h.p. diesel-mechanical shunting locomotives for use on the metre gauge railway of a mining company in Spain. The locomotives will be powered by "6.L.B." type engines supplied by W. H. Dormans & Co. Ltd. and developing 105 h.p. at 1,500 r.p.m. The locomotives will weigh 16 tons in working order and be capable of hauling 580 tons on level track.

South African Railways & Harbours Administration has placed a contract with Cowans-Sheldon & Co. Ltd., Carlisle, for eight high-speed cargo handling cranes at a cost of some £250,000. The cranes will be installed at Cape Town for handling general merchandise.

South African Railways has placed an order with Doulton Industrial Porcelains, Limited, for 200,000 6-in. disc insulators. They incorporate a patent device for preventing electrolytic action, developed by British Insulated Callender's Cables, Limited.

British Railways, London Midland Region, have placed the following contracts:—

William Mulcaster & Co. (Contractors) Ltd., Haslington, Crewe: diesel oil fuelling plant, examination and repair shop, Crewe

Mechanised Contractors (London) Limited, Ealing Broadway, W.5: formation renewal and drainage, down line, 126 m. 200 yd. to 126 m. 739 yd. Braunston & Willoughby to Rugby Central

Biggs, Wall & Co. (Hitchin) Ltd., Muswell Hill, N.10: locomotive watering facilities, Woburn Sands

Eagle Construction Co. Ltd., Scunthorpe, Lincs: permanent way work, London District, 1958

Demolition & Construction Co. Ltd., London, S.W.1: permanent way drainage, Carlisle Citadel Station.

British Railways, North Eastern Region, have placed the following contracts:—

Hymatic Engineering Co. Ltd., Redditch: six Hymatic Hydrovane mobile compressors

Consolidated Pneumatic Tool Co. Ltd., Gateshead: pneumatic tools and wrenches

I.T.D. Limited, London: one fork lift truck and ancillaries, Stockton Goods Depot

Artic Fuse & Electrical Manufacturing Co. Ltd., Birtley: one medium voltage switchboard, York North Motive Power Depot.

British Railways, Scottish Region, have placed the following contracts:—

The International Furnace Equipment Co. Ltd., Aldridge, Staffs: provision of whitemetalling plant, Inverurie Workshops

A. & J. Faill Limited, Glasgow: improvements to roadway, East Kilbride goods station

Wilson Bros. (Builders) Ltd., Glasgow: construction of staff amenities building and alterations to office building, Glasgow Stobcross high and low level goods yards

Benham & Sons Ltd., London: low-pressure hot water heating installation,

Glasgow Kilbirnie Street road motor repair depot

Metropolitan-Vickers-GRS Limited, London: installation of electric colour-light signalling between Westerton and Bowling, Glasgow suburban electrification.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From South Africa:

91,770 perforated plates, 8 ft. by 4 ft. by $\frac{1}{8}$ in. to drg. L.9494/1 approx. 500 plates, specn. No. CME.9/1952

134,000 perforated plates, 8 ft. by 4 ft. by $\frac{1}{4}$ in. to drg. CME. 124/13-A99 item 4, approx. 550 plates, specn. No. CME. 9/1952

35,000 perforated plates, 6 ft. by 3 ft. by $\frac{1}{4}$ in. to drg. CME. 124/13-A99 item 2 approx. 244 plates, specn. No. CME. 9/1952

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. H.7121: Perforated Plates" should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is March 28, 1958. The Board of Trade reference is ESB/4645/58.

From Spain:

Equipment for welding rails, each unit to comprise:—

1 preheating set, two-outlet type

1 polishing set with 10 flexes, two heads, and 50 stones

2 burners

50 rail crucibles, 45 kg.

50 rail crucibles, 54 kg.

1,000 mouthpieces

2 crucible carriers

2 crucible collars and two crucible carrier collars

2 crucible covers

3 moulding presses

15 pairs carcasas

30 stoppers

1 welding pattern

1 set of rulers, spattles, and small equipment

The issuing authority and address to which bids should be sent is Sr. Director de la Red Nacional de los Ferrocarriles Españoles — Ayuda Económica — San Cosme, 1, Madrid, Spain. The tender No. is 52-33-47-6-70.032. This purchase will be financed by the International Cooperation Administration (I.C.A.), the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is March 15, 1958. The Board of Trade reference is ESB/4234/58/I.C.A.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

TRENT & MERSEY CANAL DEVIATION.—A diversion of the Trent & Mersey Canal is being carried out by British Transport Waterways at Marston, near Northwich, Cheshire, to avoid the danger of a breach of the canal through nearby abandoned salt mine shafts. The diversion is about 650 yd. long and 55 ft. wide, and is a completely new section of canal.

British Railways Expresses Featured in Window Display



Window display featuring named expresses, arranged by the department of the Public Relations & Publicity Officer, Eastern Region, at the British Railways Town Office, 110, Victoria Street, London, S.W.1

Notes and News

Repair of Hedjaz Railway.—The Jordanian Minister of Communications, Mr. Hashim Jayousi, has stated that the cost of repairing the 500 route miles of the Hedjaz Railway would be £8-£10 million.

North-East Frontier Railway of India.—Katihar, the present junction between the North-East Frontier Railway of India and the residual North Eastern Railway, is in East Bihar, and not in North Bengal as was stated in error on page 217 of our February 21 issue.

Slump in Railway Freight Traffic.—The reference to the second sentence of the first paragraph of the editorial article on page 213 of last week's issue should be to this December and not to "last December." Freight train miles run were 134,907,000, and not 134,507,000 as was printed in error in the fifth paragraph.

"Green Arrow" Service Extended to all Wagon-load Traffic.—As from March 3, British Railways' "Green Arrow" registered transit arrangement, under which consignments are specially watched and notified at various control points throughout the journey, will be extended to all classes of freight traffic conveyed in full wagon-loads. This service, for which a registration fee of 2s. 6d. a consignment is payable, is at present available only for full wagon-loads for shipment, and for all perishable, livestock and household removal traffic. During transit the wagons bear a prominent "Green Arrow" label.

Agencies Required for Formosa Market.—Kiangsons Trading Co. Ltd., 1,265 Chung-cheng Road, Taipei, Taiwan, has informed the British Consulate at Tamsui that it is interested in obtaining United Kingdom agencies for locomotives and railway equipment; electric motors and generators; factory and workshop machinery; and air conditioning equipment. Kiangsons Trading Co. Ltd., founded in 1950, are importers of medicine, motorcar parts, rubber, tyres, machinery, and tools. There is also an affiliated concern known as Kiangsons Motors Limited, also of Taipei. Kiangsons

Trading Co. Ltd. is considered to be a suitable connection for United Kingdom firms. Suppliers interested in this agency enquiry should write direct to the Taiwan company, at the same time notifying the British Consulate, 36 Chen Li Chieh, Tamsui, Formosa.

Railway Material Exports from Hungary.—Safety equipment is reported to be supplied by Hungary to the Jugoslav and Czechoslovak State Railways. Negotiations are also stated to be in progress on the supply of safety equipment to the Argentine State and Egyptian Republic Railways.

Winding Up of S.L.N.C.R.—When the hearing of an application for the winding up of the Sligo, Leitrim & Northern Counties Railway Co. Ltd. came before him in the Ulster High Court last week, the Judge commented that in view of possible conflict of jurisdiction he felt it was a case in which the assistance of the Attorney-General could be sought. The case was adjourned and the appointment of a provisional liquidator was agreed. Counsel for the company, referring to doubts as to jurisdiction because part of the S.L.N.C.R. ran through territory of the Republic, said that the only possible conflict could be with the Republic of Ireland Act regarding closure of railways contrary to the wishes of the population. In the view of the authorities in Dublin, he pointed out, that Act was not appropriate in this case.

Marconi Instruments at the I.E.&A. Exhibition.—Marconi Instruments Limited of St. Albans will be exhibiting at the Instruments, Electronics & Automation Exhibition, at Olympia, London, from April 16-25. Besides a wide range of telecommunication measurement equipment, the company will show three industrial X-ray equipments. The fluoroscopic and radiographic cabinet type TF 1601 is suitable for the direct visual examination of small objects by X-ray fluoroscopy, and also has provision for radiography. The transportable 160-kVp. equipment type TF 1584 can be used for laboratory, workshop, or field use, and the transportable

175-kVp. equipment type TF 1593 is designed for panoramic radiography of circumferential welds or of objects placed in a circle. This latter is stated to be particularly suitable for use under most conditions met with in works or dockyards.

Light Alloy Construction Limited Open Factory in Belfast.—To mark the opening of the Carnmoney (Belfast) factory of Light Alloy Construction Limited, an exhibition of the firm's range of aluminium alloy materials handling containers was held in London on February 20. Exhibits included examples of the various designs of containers which the company has at present in production. Some of these are described in "New Equipment & Processes" on page 256 of this issue.

"Bless the Bride."—"Bless the Bride," the spectacular musical show by A. P. Herbert and Vivian Ellis was presented by the Great Western Railway (London) Operatic Society at the Scala Theatre, London, on Wednesday last. It runs nightly until tomorrow (Saturday, March 1) at 7 p.m. This popular post-war show is admirably suited to the outstanding ability of the cast which numbers over 70 and is composed of members of the clerical staff in the London area of the Western Region of British Railways supported by guest players well known in the amateur theatre. Mr. Frederick G. Lloyd is responsible for the entire production with dances and ensembles by Miss Alison Maclare; the orchestra is under the direction of Mr. David Allan.

Dark Smoke an Offence after June 1.—On June 1 the remaining provisions of the Clean Air Act, 1956, will be brought into operation; the principal effect of these will be that the emission of "dark smoke" from chimneys will become an offence with fines up to £100. This order will apply to steam locomotives as well as factories, offices, and so on. Much of the Act has been in force since the beginning of 1957 when powers were granted to local authorities to establish smoke control areas. Editorial reference was made to this in our issue of February 1, 1957. No

Demonstration Run of First Western Region Diesel-Hydraulic Locomotive



Diesel-hydraulic 2,000-h.p. type "4" A1A-A1A locomotive No. D 600, built by the North British Locomotive Co. Ltd., on eastbound demonstration run on February 17 (see last week's issue); the leading vehicle is the dynamometer car

special directive is being issued by the British Transport Commission to steam locomotive drivers, it is stated, as there is a permanent instruction for enginemen to ensure that the emission of dark smoke is kept to a minimum.

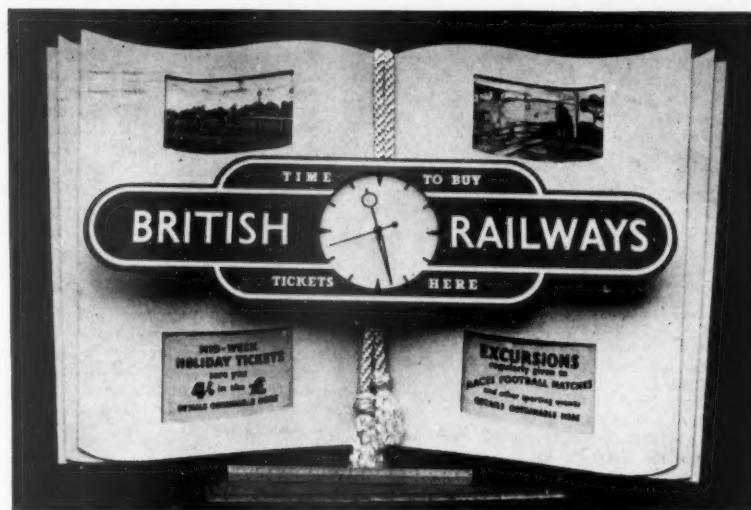
Wild-Barfield New Birmingham Office.—Wild-Barfield Electric Furnaces Limited of Watford, Herts., has announced that from March 1, the address of the Midlands office of the company will be 71, Broad Street, Birmingham, 15. The telephone number will be Midland 7232.

North Eastern Region Ticket Agency Display Unit.—The unit shown in the accompanying illustration is being displayed in ticket agencies throughout the North Eastern Region of British Railways. The British Railways totem is coloured Regional tangerine. The leaves of the book are dove grey and the silken cord white. The clock is permanently illuminated and a flasher illuminates the coloured pictures and advertisement panels alternately. The size can be judged from the 18-in. ruler at the bottom.

More Diesel Services in L.M. Region.—Diesel trains will replace the steam services in the London Midland Region between Manchester London Road, Stoke, and between Birmingham New Street, Wolverhampton, and Stafford on March 3. There will be eight additional trains daily each way to and from Manchester and Stoke. Certain diesel trains will run through between Birmingham and Stoke. These services were intended to go into operation on February 3, but had to be postponed because of a defect which had developed in one of the types of unit which were to be used.

Seventh International Mechanical Engineering Congress.—Provisional details of the seventh International Mechanical Engineering Congress which will be held at The Hague, Holland, on June 2-6, 1958, have been released. Organised by the Vereniging Van Metall-Industrieën of The Hague, the three main sections for discussion will be: "The industrialist faced by his choice of raw materials," "Heavy engineering industries and their suppliers of raw materials and rough parts," and "Cost price." It is also planned to visit a number of industrial establishments; these include the Royal Netherlands Blast Furnaces & Steelworks, Ijmuiden; the Rotterdam Dockyard Company; the Shipbuilding & Engineering Works, Wilton-Feyenoord, Schiedam; and the Royal Dutch Forge, Leyden. The sponsoring associations in this country are the British Electrical & Allied Manufacturers' Association and the British Engineers' Association.

Southern Region H.S.A. Help for Orphans.—At an informal gathering at the Charing Cross Hotel, London, on February 17, cheques were handed to Mr. S. F. Greene, Acting General Secretary of the N.U.R., and to Mr. A. Hallworth, General Secretary, A.S.L.E.F., by Mr. L. T. Leonard, Chairman of the British Railways, Southern Region, branch of the Hospital Savings Association. The amounts were given to the orphanage funds of the two unions. Presiding over the gathering was Mr. H. C. Lang, Regional Establishment & Staff Officer, and among these present were Mr. C. S. Clark, General Secretary of the H.S.A., and Mr. A. C. Williams, Southern Region Branch Secretary. The cheques represented



Display unit for windows of British Railways, North Eastern Region, ticket agencies

surplus funds of the branch after the fixed benefits had been paid. Mr. Williams said that his branch liked to give these surplus funds to the organisations to which most of their members belonged. In the Southern Region there were now more H.S.A. members than before introduction of the National Health Service.

Fire at A.C. Cars Limited Works.—A fire broke out in the Thames Ditton factory of A.C. Cars Limited in the early hours of February 21. The stores, drawing office, and a large part of the works were destroyed. The company states that the fire will have little or no effect on the production of the four remaining railbuses at present being manufactured by this company for British Railways. These vehicles, the first of which was described in our February 21 issue, are being constructed at the firm's factory at Tagg Island, Hampton. The frames and most of the parts have already been manufactured. These were in store at Hampton.

Heavy Snow Delays Rail Traffic.—Heavy falls of snow in most parts of Britain on February 24-25 caused widespread delays to rail traffic. "The Caledonian" express train from Glasgow Central arrived at Euston Station at 10.58 p.m., nearly eight hours late. Because of blocked roads, an ambulance was unable to reach a four-year-old child, ill with appendicitis, at Bamford in Derbyshire. Railwaymen failed in their efforts to free a train marooned in a snowdrift, so a light engine with a snowplough was sent out, and the child and her parents travelled on the footplate of the engine for the 15-mile journey to Sheffield. A 70-m.p.h. gale in the English Channel caused delays to railway steamers.

Fishguard & Rosslare Railways & Harbours Company Results.—The net revenue account balance of the Fishguard & Rosslare Railways & Harbours Company for the half-year to December 31, 1957, stood unchanged at £35,563. As before, debenture interest took £13,904, and the dividend on the new guaranteed 3½ per cent preference stock £21,659. No dividend is declared on the ordinary shares or on the new 3½ per cent preference stock, 1914, as these are held by the British Transport Commission

and Coras Iompair Eireann, which both guarantee the interest on the capital represented thereby. The capital expenditure balance was £7,992; £8,898 was spent on additional constructional work and installation of further equipment in the Company's ships, s.s. St. Andrew, St. David and St. Patrick.

British Firms at the Leipzig Fair.—Among some 100 British firms exhibiting at the Leipzig Spring Fair on March 2-11, are Imperial Chemical Industries Limited, the Guest, Keen & Nettlefold group, the Marconi group, Pye Telecommunications Limited, Rolls-Royce Limited, the Rootes group, and Massey-Morris-Ferguson Limited. In addition a very wide range of engineering, electrical, and construction equipment will be shown.

Model Plant to Show Merits of Automation.—A small-scale working automatic production plant will be used by the Electrical Development Association to draw attention to electronic control in automation on its stand at the Instruments, Electronics and Automation Exhibition. This is to be held at Olympia, London, on April 16-25. A number of methods of electronic control will be incorporated on the plant, and it will be demonstrated as to how these applications can be suited to a wide range of industrial processes. Photographs and display matter will show the use of particular devices in factories.

York Station Christmas Tree Appeal.—The General Manager of British Railways, North Eastern Region, Mr. H. A. Short, recently handed a cheque for £430 to Mr. B. Philip Rowntree, Chairman of the York City Hospital House Committee. The cheque is a result of the York Station Christmas Tree collections, with various supporting efforts and donations by local railway staff, which raised £511; the balance is being distributed to various York charities. Since 1935, when the Christmas Tree collection was started at York Station, £9,200 and 7,684 parcels of books and toys have been collected for local hospitals and charities.

Better Prospects for Tecalemit.—The directors of Tecalemit Limited, will in their annual report state that the com-

February 28, 1958

pany has a full order book and a factory working to capacity; and results for the current year ending July 31 next should show a definite improvement on those of 1956-57. During this latter period group net profits declined from £160,437 to £131,949, and the dividend is reduced to 11 (13) per cent. Fixed assets now total £1,658,206 (£1,616,161), but the interest in associated companies is reduced from £254,273 to £106,556. The annual meeting is to be held on February 21.

Forthcoming Meetings

March 3 (Mon.).—Institute of Transport, Metropolitan Section, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "Modern rolling stock," by Mr. L. B. Alexander.

March 3 (Mon.).—Institute of Transport, Sheffield Section, at the Royal Victoria Hotel, Sheffield, at 6.30 p.m. Paper on "Transport in modern times," by Major-General G. N. Russell.

March 4 (Tue.).—Institute of Transport, Irish Section, at the C.I.E. Club, Dublin, at 6.15 p.m. Paper on "Railway salesmanship," by Mr. E. W. Arkle.

March 4 (Tue.).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "Further developments in civil engineering plant," by Mr. A. C. Layhe, Plant Assistant to the Chief Civil Engineer, North Eastern Region.

March 5 (Wed.).—Electric Railway Society, at the Fred Tallant Hall, 153, Drummond Street, London, N.W.1, at 7.15 p.m. Paper on "Australian electric railways," by Mr. Noel Reed.

March 5 (Wed.).—British Railways, Southern Region, at the Chapter House, St. Thomas' Street, London, S.E.1, at 6 p.m. Paper on "The nationalised gas industry," illustrated by lantern slides, by Miss M. L. Burgess, member of Institute of Journalists.

March 5 (Wed.).—Institute of Transport, London Section, at 80, Portland Place, London, W.1, at 5 for 5.30 p.m. Joint meeting with the British Section Société des Ingénieurs Civils de France. Paper on "The latest developments and future prospects of the S.N.C.F." by M. Pierre Weil, Chief Public Relations & Press Officer, French National Railways.

March 6 (Thu.).—Institute of Transport, Merseyside Section, at the Chamber of Commerce, Liverpool, at 6.30 p.m. Paper on "Railway management," by Mr. E. W. Arkle.

March 6 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, at Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Work study," illustrated by lantern slides, by Mr. K. G. Kenrick, Associated Industrial Consultants Ltd.

March 7 (Fri.).—The Railway Club, at 320, High Holborn, London, W.C.1, at 7 p.m. Paper on "Some features of Continental signalling instructions," by Mr. T. S. Lascelles.

March 8 (Sat.).—Railway Correspondence & Travel Society, Bristol & District Branch, at the Grosvenor Hotel, Bristol 1, at 3 p.m. Paper on

"Western nonconformity," by Dr. W. A. Tuplin.

March 8 (Sat.).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 7 p.m. Film programme, presented by Mr. C. J. Baraard.

March 10 (Mon.).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "Relations in industry," by Mr. D. M. Sinclair.

March 10 (Mon.).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Illustrated paper on "The Festiniog Railway," by Mr. N. A. Pearce.

March 12 (Wed.).—Institute of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. Paper on "Interference in line-side cable circuits from 25 kV. 50 c/s traction systems," by Dr. A. Rosen, B.I.C.C. Limited.

March 12 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Railway research," by Mr. T. M. Herbert, Director of Research, British Railways Central Staff.

Railway Stock Market

There has again been very little business passing in foreign rails, and many quotations were not tested in this and other sections of stock markets. Not much selling developed; on the other hand, a waiting attitude prevailed because of the difficulty of assessing the outlook. In the circumstances buyers were showing considerable caution. The big topic of discussion is still how long the U.S.A. trade recession will continue. Already this has been mainly responsible for a sharp fall in commodity and metal prices. A slowing down of world trade is feared; the sharp fall in freight rates and the laying up of ships are an important indicator of current trends. There are, however, increasing expectations that the position in the U.S.A. will improve during the next few months, because it is believed that President Eisenhower would put into force, if necessary, additional measures to stimulate industry.

The strength of British Funds has been less in evidence but earlier profit-taking was followed by renewed demand. Nevertheless there are very divergent views as to whether an early reduction can be expected in the bank rate. It is true that there have been many pronouncements that the credit squeeze by the banks must remain in force; but this does not imply that a cut in the bank rate cannot be expected. In fact, in some quarters it is being argued that the flow of foreign money to London, which is stimulated by high money rates, may prove unhealthy and may have to be checked in due course.

Costa Rica ordinary stock has remained at 17½ and the second debentures were quoted at 89½, while Chilean Northern debentures were 34½. International of Central America common shares at \$20½ were \$2 lower than a week ago.

Antofagasta stocks have not recovered from their recent fall, the ordinary keeping at the lower price of 15½ recorded a week ago, while the preference stock

receded further from 36 to 35½. In other directions, United of Havana second income stock eased afresh from 6 to 5½, while the consolidated stock was again only 1½.

San Paulo 3s. units were again quoted at 2s. Brazil Railway bonds kept at 5½, Mexican Central "A" bearer debentures receded further to 66.

White Pass shares fell further from \$134 a week ago to \$12½ in accordance with the general market trend. Canadian Pacifics also lost ground, being \$44½, compared with \$46 a week ago. Moreover, the preference stock and 4 per cent debentures moved fractionally lower at 54 and 64½ respectively.

Nyasaland Railways shares were quoted at 9s. 9d. and the 3½ per cent debentures at 60½.

Business in shares of locomotive builders and equipment companies was again on a small scale. Charles Roberts 5s. shares at 8s. were steady following news of the proposed take-over offer to shareholders in Hurst Nelson, namely four ordinary shares of 5s. each in Charles Roberts plus 5s. per share in cash for every £1 ordinary share of Hurst Nelson. The shares of the last-named company have responded with an advance to 34s., which compares with 26s. 3d. a week ago. Wagon Repairs 5s. shares strengthened to 10s. 7d. and Birmingham Wagon have been well maintained at 17s., but on the other hand, North British Locomotive were marked down from 11s. 3d. to 10s. 9d. and Beyer Peacock from 7s. 7½d. to 6s. 7½d. English Electric, after the rise to 48s. 3d. which followed the past year's excellent results, eased to 47s. though the full report mentions that the group's unexecuted orders now amount to as much as £250,000,000, compared with £180,000,000 a year ago. General Electric shares eased from 31s. to 30s. 9d. and Associated Electrical from 48s. 3d. to 48s.

British Timken strengthened from 45s. 9d. to 46s.. Pressed Steel 5s. shares were quite well maintained at 12s. 9d. but T. W. Ward lost a few pence at 7s. 3d., though Ruston & Hornsby strengthened a little to 23s. 9d. Helped by the past year's record earnings, British Oxygen shares firmed up to 30s. though the dividend is again limited to 10 per cent and a good proportion of net profits added to reserves.

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